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USSR Report

ENERGY

No. 33

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CHIRSKOV ON SIBERIAN DEVELOPMENT

Moscow STROITEL'STVO TRUBOPROVODOV in Russian No 5, May 80 pp 5-7

[Article by V. G. Chirskov, deputy minister of Construction of Petroleum and Gas Industry Enterprises USSR: "Siberian Acceleration"]

[Text] The Soviet people marked the 110th anniversary of the birth of V. I. Lenin with high labor achievements and with outstanding success in the development of their economy, science and culture. One of the most reknown deeds of the party and people along the path of communist construction is the creation of the West Siberian Oil and Gas Complex, an accomplishment which resolved to a significant degree the key national economic problem of providing the nation with fuel and chemical raw materials. Over an unusually short period of time, practically within 15 years, the uninhabited taiga became a large industrial center which now provides more than one-half of all the oil and more than one-third of the gas extracted within our nation.

This remarkable transformation of the Tyumen's North--the main supplier of Siberian oil and gas--is vividly conveyed in the following words of Comrade L. I. Brezhnev: "It is no longer forest and reindeer paths which characterize the landscape of Tyumenskaya Oblast but rather young cities, oil and gas fields, plants, railroads and motor highways. And on what a scale! Consider this one fact alone, comrades: Being assimilated into the economy and settled along the Ob' River is a territory some 1 million square kilometers in size. This is equal approximately to the area of Spain, Italy and England combined."

This has become a reality thanks to the wise policy of the party and government, which headed the conquering of this Siberian "oil virgin land," thanks to the efforts of all of the fraternal people of our nation, to the selfless labor of our geologists, oil workers, gas extractors and construction workers, and to the important work performed by party, soviet, economic, trade-union and komsomol organizations of Tyumenskaya and Tomskaya oblasts.

The decisive attack upon the mineral wealth of the taiga was placed into motion following the 23rd Party Congress, which decreed that our most important task was to be the creation of new oil and gas extraction centers in West Siberia.

In January of 1970, during the time when the nation prepared to mark the 100th anniversary of the birth of the leader of our revolution, there was published the decree of the CPSU Central Committee and the USSR Council of Ministers on the accelerated development of the oil extraction industry in West Siberia. Contained in this document was a detailed program for the complex development of the region's economy. During that year when, in compliance with the directives of the 23rd Party Congress, the plan was to extract 20 to 25 million tons of oil from below the Siberian earth, our party and government announced with confidence that within only 10 years the extraction of liquid fuel from this region would increase to 230 - 260 million tons. Here it is the year 1980. There is no doubt but that the workers of West Siberia will overfulfill the task of the party with honor and that they will provide the motherland with more than 210 million tons of oil and more than 155 billion cubic meters of gas.

Side by side with these oilfield workers, beginning with the very first days of the mastery of the Tyumen' North, our builders of petroleum and gas enterprises prepared for and are now preparing this labor victory.

Units of the Ministry for the Construction of Petroleum and Gas Industry Enterprises are erecting complex industrial installations and systems for the transportation of oil and gas, i.e. are fulfilling the work which requires the greatest expenditure of labor in mastering the oil and gas sites, as well as in laying down powerful underground pipe trunklines. The contribution of the workers of this industrial branch has, to a great degree, determined the scale and the development tempo of the Tyumen' North.

Between 1964 and 1979, the volume of contractual work fulfilled by work collectives of the Ministry of Construction of Petroleum and Gas Industry Enterprises in West Siberia exceeded 11 billion rubles. Covered by those figures are major underground pipelines which stretch for thousands of kilometers, industrial installations, oil pumping and gas compressor stations, well-built blocks of apartments in new cities and settlements in the taiga and tundra, plus the new and ebullient life in the most remote corners of the Yamalo-Nenets and the Khanty-Mansiysk autonomous okrugs. Placed into operation during the period indicated were over 18,000 km of major pipe trunklines, hundreds of large surface installations, and about 4 million square meters of housing, kindergartens, schools and hospitals.

However, even these impressive results fail to provide a concept of the scale of oil and gas construction work in the north today. Work volumes increase sharply from year to year. During the four years of the present 10th Five-Year Plan, 1.345 billion rubles were spent here than had been expended over the previous 12 years.

Demonstrated by this is the constant attention which has been shown the oil and gas industry by the CPSU Central Committee and the Soviet government, plus the concern of all branches of the national economy for material-technical provision of northern construction projects. The ranks of the construction workers have been added to by young men and young women who have come out to the area at the call of the Komsomol Central Committee. Student construction detachments have become the faithful assistants of our ministry units. In the Leninist manner, hand in hand with native Siberians, there are now working here envoys of all the union republics plus thousands of construction workers from fraternal Bulgaria. For the Ministry of Construction of Petroleum and Gas Industry Enterprises West Siberia has become the main construction site. There are now employed here about 125,000 workers of our industry; it is here that almost one-half of our production program is being carried out.

It is not by this alone, however, that the special significance of West Siberian construction projects in all of our work is measured. The need for the intensive mastery of this region has been facilitated, to a decisive degree, by the rapid formation and growth of production collectives and has been reinforced by experience, which has provided a mighty impulse to our industrial technical progress.

The year is 1964. Work has begun on completion of construction of oil well sites of the Shaimskoye Group and of the Punginskoye Gasfield and preparations are being made to lay down the Shaim-Tyumen' oil pipeline and the Igrim-Serov gas pipeline. The elements of nature are raw and unusual: the unknown Taiga, the impassability of roads, the abundance of marshes, the deep snow, and the furious frost.

The north examined people and equipment anew, refuted traditional work examples and methods, and compelled us to seek ways out of unanticipated situations, new engineering decisions.

The fortitude and innovation of these pioneers met with success. When Tyumen' oil and gas was sent gushing into pipelines, no one could doubt any longer the accessibility of the energy wealth of Siberia. Its great future could be more precisely delineated. But the task of the further accelerated mastery of the region could only be resolved through assignment to the area of construction detachments from the European part of our nation, detachments without industrial bases and without the skill of work in the north. That is why, beginning in 1964, the productive capacity of an army of many thousands of oil and gas installation construction workers was created and why it has been expanded uninterruptedly since.

The founding father of this army of workers is the collective of the Order of Lenin Main Administration for Construction of Petroleum and Gas Industry Enterprises in Tyumen' Oblast, which marked its 15th anniversary in February of 1980. Its great labor and creative contribution is contained in the creation of almost all of the new cities and settlements, oil and gas fields and fuel transport systems which were built on the soil of Tyumen'. Reared by it were the units and cadres which became the nucleus of the powerful, specialized organizations such as the Main Administration for Construction of Pipelines in Siberia and the Sibkomplektmontazh and Sibzhilstroy associations, which were formed here in the 1970's.

The collective of the Main Administration for Construction of Petroleum and Gas Industry Enterprises in Tyumen' Oblast introduced a multitude of innovations, without which it is impossible to even conceive of our construction projects of today. First and foremost was its use of the unitized-block method of construction. Utilization of subassemblies and blocks put together at the plant facilitated maximum tempos in the erection of installations under conditions in which the sites were located a tremendous distance from industrial bases, reduced standard construction schedules by 3-4 times, and saved hundreds of millions of rubles per year. Future wide-scale application of the unitized-block method of construction was called for in decisions of the 25th Party Congress.

A multitude of other innovations were also used successfully. Unswervingly concerned about the industrialization of labor and the improvement of economic work, the main administration is confidently intensifying the tempo of industrial construction. A great contribution to this effort has been made by the collectives of the Megiongazstroy, Samotlorneftepromstroy, Severgazstroy and Tyumengazmekhanizatsiya trusts.

More than 3,000 km of pipeline, 9 compressor and oil-pumping stations are to be placed into operation in 1980 by units of the Main Administration for Construction of Pipelines in Siberia. Over the 7 years of its existence, the program of the main administration has been increased 3.5 times, to 750 million rubles. Yet during that same period the number of its workers has only doubled. The increase in its labor productivity was achieved primarily through improvement of production organization and introduction of new equipment and technology.

Embodied in the creation of the Main Administration for Construction of Pipelines in Siberia is a basically new approach to the organization of pipeline construction. The structure of the complex trusts under the chief directorate which fulfill all types of gas pipeline work permitted the formation, from the very start of their creation, of powerful and complex mechanized columns for the laying down of major pipelines, columns oriented towards a maximum daily pace through the synchronized movement of all of their links. This new organization of labor had a radical effect upon altering previously held concepts as to the capabilities of both people and equipment. Reinforced brigades of the Ob' River, Northern and Urengoy pipeline construction trusts which comprise the high-tempo complex columns were able to lay down, during the 4-5 months of the

Siberian winter, 80 to 100 km of large-diameter underground gas pipeline--twice the average for our industry. It was precisely this example which prompted a change in the structure of all line trusts of the Ministry of Construction of Petroleum and Gas Industry Enterprises, which have now taken upon themselves the armor of the experience of the Siberians.

The laying down of these Northern pipelines would have been inconceivable without technical innovation. The chief directorate's units mastered the handling of a number of highly productive welding units which had been created by the Institute of Electric Welding imeni Ye. G. Paton. These units also developed and introduced, with the cooperation of scientific research organizations, effective methods for anchoring pipelines over flooded sectors. Certain formulations of Main Administration for Construction of Pipelines in Siberia innovators (for example, the multioperable welding unit mounted on a K-701 tractor) were selected as examples by plants for subsequent series production.

The Sibkomplektmontazh Association has become a large industrial base, a creative laboratory of the unitized-block method of construction which is being applied on an ever-wider scale. Put together in a block at its main enterprise in Tyumen' are many of the units which go into oil pumping and gas compressor stations as well as into oil and gasfield installations--drill pumps, extraction pumps, pumping stations, gas and oil collection points. The variety of products increases steadily. The work collective has already mastered the manufacture of superblocks weighing up to 300 tons. Out on the Northern construction sites these giants are transported via water on pontoons. The association is also one of the leading specialized units in the installation of technological equipment for oil-pumping and compressor stations.

Steadily picking up its tempo also is the work collective of the Sibzhilstroy Association, which is due to play a decisive role in fulfillment of party and state tasks for the construction of housing in West Siberia.

In the conquering of West Siberia, an extremely important role is being played by scientific research and design organizations, which are being called upon to arm our construction workers with highly-effective work technical decisions and methods applicable to conditions in the north. Every success along this path, even the most modest one at first glance, can produce here--when one considers the colossal volume of construction--a tremendous national economic effect. In this connection, the formation of scientific research and design centers with an emphasis upon Siberia is acquiring exceptionally important significance: they need but move closer geographically to where the new structures are being built and to the production collectives out there; this would, without doubt, accelerate the development and introduction of production innovations. An example of this is the considerable creative contribution made by the Siberian Scientific Research and Design Institute for the Construction of Gas Industry Enterprises plus future plans to begin construction in Tyumen' of an affiliate of the "Gazstroymashina" Special Design Bureau. With the placing into operation of new production sites there will be a significant increase in the possibilities afforded workers of the Tyumen' "Gazstroymash" Plant, which is fulfilling responsible assignments in the manufacture of new equipment and in the repair of construction machinery.

Units of the Ministry of Construction of Petroleum and Gas Industry Enterprises based in Siberia possess sufficient technical means plus everything necessary for successful fulfillment of the tasks placed before them. But their main resource is the knowledge and experience of people and their labor heroism.

The "shock" structures of West Siberia have developed many remarkable masters of their own fate. There are Hero of Socialist Labor and USSR State Prize Winner N. P. Nezhdanov, Heroes of Socialist Labor M. G. Amvros'yev, I. M. Davidenko, I. G. Shaykhutdinov and V. P. Tsvetkov, State Prize Winners M. I. Buyanov, B. P. Diduk, Yu. I. Kil'dyushov and V. F. Kalenov, Deputy to the USSR Supreme Soviet and Leninist Komsomol Prize Winner P. A. Baryayev, Leninist Komsomol Prize Winners V. I. Mashov and I. Ye. Nosov, plus hundreds of other workers and engineers-technicians who have moved to the forefront of socialist competitions for the successful fulfillment of 10th Five-Year Plan assignments.

Particularly great is the significance of the labor victories gained by the conquerors of the Samotlor and the Urengoy gasfields.

This Samotlor oil lies under a multimeter thickness of marshes while the central portion of the oil site lies under a large lake. There is a multitude of marshes also on the approaches to Samotlor. Under such conditions, it was necessary to carry out a great deal of work within a very short period of time. Many innovations had to be resorted to, innovations now used on a wide scale in oilfield construction. The situation compelled the laying down of a soil cover at the sites and the replacement of soil foundations under well reservoirs, the stand insulation of pipes, plus use of realined anchors to reinforce pipelines. Supplying of equipment for collection points presented a problem to the plants as to the assembly and preparation of oil for transport over distances; they unified the drill and extraction pumps of pumping stations, the terminals of separation and thermochemical facilities and of tanks for the storage of oil. Location of all of these structures on one site provides a large savings. Now in operation at the Samotlor field are several such points, the overall capacity of which is over 150 million tons a year.

The maximum extraction level at Samotlor was achieved ahead of schedule. The powerful Samotlor-Anzhero-Sudzhensk trunk pipeline was installed at a forced pace. On the eve of the date of Lenin's birth in 1973 the Samotlor-Al'met'yevsk pipeline accepted its first oil from the Samotlor field. Subsequently, the Nizhnevartovsk-Kuybyshev pipeline was placed into operation. As a result, there began a powerful flow of liquid fuel to the central, western and eastern regions of our nation.

The builders of Samotlor were the first in West Siberia to begin resolution of the important task of the utilization of gas encountered in the extraction of oil. Now in operation in the Ob' River area are 6 gas processing plants with an overall capacity of 14.5 billion cubic meters a year. This gas is being supplied to the Surgut GRES, to metallurgical enterprises of the Kuzbass; within a short period of time, the product of this gas processing will become the raw material for the Tobol'sk Petrochemical Complex.

Of assistance in the conquering of the Urengoy Gas Condensate Field was the great deal of experience accumulated in completing construction of the gas sites in the Berezovskiy Group and the Medvezh'ye Field, as well as our experience in the construction of the Nadym-Urals-Center pipeline system. The gas wells of the Medvezh'ye Field were brought up to their projected capacity of 65 billion cubic meters of gas a year in a record short period of time. Comrade L. I. Brezhnev warmly congratulated all participants in this feat upon their labor victory.

Expansion of the capacity of the Urengoy Field will require twice the pace of the Medvezh'ye Field, but our construction and gasfield workers have already demonstrated that such a task is a realistic one.

The new construction projects of the Urengoy Field represent memorable and historic pages in the history of the Tyumen' North. On 22 April 1978, Lenin's birthday, construction workers reported the field's readiness for industrial exploitation. In less than 12 months, almost 1-1/2 years ahead of schedule, a powerful installation for the complex preparation of gas (UKPG) rose out of the tundra and permafrost, far removed from industrial bases and transport communications. Complex technical problems were resolved also by the men who cut the path for the gas pipeline between Urengoy and Medvezh'ye. There will be on that gasfield, by the end of 1980, 6 such UKPG installations with a daily productive capacity of 220 million cubic meters. Two sections of the mighty Urengoy-Chelyabinsk pipeline have been put together while the Urengoy-Gryazovets pipeline is being laid down at twice the normal pace.

During the present 5-year plan the intention, at the Urengoy Field, is to achieve a basic increase in the all-union extraction of gas. When it reaches its projected capacity within the next few years, the Urengoy Field will be providing one out of every five of the cubic meters of blue fuel being produced within the nation. For the resolution of this task, the Urengoy gas pipeline construction and the Urengoy Gas Industry Construction trusts have already been organized.

Builders of the nation's chief power base have marked the 110th anniversary of the birth of Vladmir Il'ich Lenin in a fitting manner. By that noted date, all contract work for the 5-year plan had been fulfilled by collectives of the Main Administration for Construction of Pipelines in Siberia, by a number of trusts and construction administrations, by hundreds of brigades and vehicle crews. Two sections stretching for a considerable distance on the Urengoy-Gryazovets pipeline had been completed while dozens of other installations had been placed into operation.

However, a great deal of work yet remains to be done in order to fulfill assignments and socialist obligations of both the current year and of the 5-year plan as a whole. It is necessary to place into operation in West Siberia about 4,000 km of pipeline, 20 compressor and 7 oil-pumping stations, over 700,000 square meters of housing, plus many other important installations. It is only after that is accomplished will we attain our planned oil and gas extraction increase and will we have created the premise for a successful start to the 11th Five-Year Plan.

West Siberia has embarked upon the second stage of its development, a stage which is wider in scale and more complex. During the 11th Five-Year Plan our units are faced with the task of almost doubling the work volumes here, of facilitating the high effectiveness of such work, and of reaching out to new and more remote deposits of oil and gas.

While being guided by Leninist vows, by decisions of the November (1979) Plenum of the CPSU Central Committee, and by the instructions of Leonid Il'ich Brezhnev, what we must do on this threshold of new and greater tasks is to analyze critically what has already been done and to concentrate our attention upon those problems and shortcomings in our work which have yet to be resolved and which are interfering with our forward progress.

In conformity with the decrees of the CPSU Central Committee and the USSR Council of Ministers on the improvement of our economic mechanism, the chief criteria for evaluating the activity of construction organizations will become not work volumes as expressed in terms of rubles but the number of installations which have been placed into operation. A number of units, by the way, are still lax in preparing for work in the new style and are content to do nothing about crude violations of plan discipline. Certain trusts are behind regularly when it comes to placing installations into operation. Failure to make regular delivery of equipment and lack of coordination of the activity of contracting and subcontracting organizations often delay the erection of compressor and oil-pumping stations. What is necessary is serious restructuring of both style and method in the management of the construction of these installations plus further improvement in unit structure and the organization of labor. In certain types of work, it is necessary to move from the brigade approach to seeing to it that all collectives engaged in the erection of one installation justify their own expenditures.

Protection of the surrounding atmosphere is acquiring ever greater significance as we increase the volume of construction. Despite all of its rawness, the natural forces of the North wound easily and our lack of care in interfering with them can result in irreparable damage. It is necessary to adhere to the undeviating fulfillment of measures aimed at the protection of the atmosphere and to step up the education of people in the spirit of a solicitous approach to both the plant and animal world of Siberia.

New and grandious tasks face doing in West Siberia. By improving the effectiveness of their work in the conquering of this region, construction workers of the Ministry for Construction of Petroleum and Gas Industry Enterprises will make a worthy contribution to the attainment of the party's Leninist approach to the undeviating strengthening of the nation's economic might and to the creation of a material-technical base for communism.

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FUELS

PRODUCTION BASE IN WESTERN SIBERIA

Moscow STROITEL'STVO TRUBOPROVODOV in Russian May 80 pp 21-22

[Article by G. A. Gorlashkina of the Scientific Research and Design-Experimental Institute of Economics and Automated Management Systems in the Construction of Petroleum and Gas Industry Enterprises and by A. I. Stoyanov of the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises: "Tasks Connected with the Expansion of Industrial Production Bases in Western Siberia"]

[Text] The increase in the volume of construction of oil and gas industry installations in the North of Tyumenskaya Oblast is having a substantive influence on the expansion of the production bases of the Ministry of Construction of Petroleum and Gas Industry Enterprises in Western Siberia. By 1980, the gross value of production volume for the West Siberian Region will increase by 182 percent in comparison with 1975 and by 173 percent in comparison with enterprises located in the European part of our nation. There will be a simultaneous increase in the relative significance of the production of the West Siberian Region in the overall industrial production of the ministry.

Inasmuch as the construction production base plays an important role in the resolution of tasks connected with realization of programs for the mastering of the West Siberian Region, a great deal of attention should be devoted to its further expansion. Proceeding from basic trends in the development of the base itself, the structure of the base is formulated and the tempo of industrial construction is determined, as is the rational location of enterprises on the territory of the region.

First and foremost, plans call for a forced tempo in the expansion of production specific to our industrial branch in Western Siberia: apparatus in which equipment is put together in blocks, pipe connections and fabricated parts for these connections, products made out of special reinforced concrete (reinforced concrete overweights), water repellent insulation of pipe, etc.

A broad complex of unitized-block construction production buildings has been developed at the present time, permitting a significant increase in the level of units which can be put together for pumping and compressor stations. Use of this unitized-block construction method decreases the amount of time needed for construction of installations by 4 to 5 times (in comparison with traditional methods), facilitates their being placed into operation ahead of schedule, this with a significant reduction of labor expenditure out at construction sites, something which is particularly important under the conditions which exist in Western Siberia.

In keeping with the trend for increasing the use of unitized-block construction, plans are now being developed for all auxiliary buildings and services. Thus, the Siberian Scientific Research and Design Institute for the Construction of Gas Industry Enterprises, together with the Tyumen' Gas Equipment Installation Trust, had developed a plan for block auxiliary buildings. Parts and components for these blocks are being manufactured at an experimental unitized-block construction plant. Introduction of these blocks will cut back construction time 3-4 times and will result in a 1.5 to 3-fold increase in labor productivity. Being contemplated for the future is the expansion of this unitized-block method of construction in the erection of gas processing plants, construction industry enterprises, housing, and service buildings used in settlements for operational workers and in pioneer bases for construction workers. Wide-scale expansion of this unitized-block construction method is possible through the further expansion of capacities for the production of blocks and block-cells; this increase in capacity to be achieved basically through new construction.

To provide ballast for pipelines which have been laid down in marshy areas, various counterweights are being used. Planned for the immediate future is expansion of production of highly-effective concrete coverings, which are to be placed over large-diameter pipe. Use of this concrete-covered pipe will lower the estimated cost of pipeline construction and will increase its quality. Production of such pipe in Tyumenskaya Oblast is to be done at special bases for the welding, insulation and concreting of pipe which is over 1,020 mm in diameter.

An important trend in the expansion of production bases in Western Siberia is the broadening of intergovernmental department cooperation as to delivery of general construction materials, parts and components.

Satisfaction of the requirements of the Ministry of Construction of Petroleum and Gas Industry Enterprises for products used in general construction (components and parts made of reinforced concrete, metal components, construction brick, lumber and woodworking components, nonmetalliferous materials, etc.) on the territory of Western Siberia is being contemplated through both production bases of our own as well as through deliveries from specialized production bases of other ministries: The Ministry of the Construction Materials Industry, the Ministry of the Timber and Woodprocessing Industry, the Ministry of Transport Construction, and the Ministry of the River Fleet.

Also being contemplated is the wide-scale use of local construction materials plus materials which are effective as enclosure structures and building coverings.

One of the most effective and economic means for decreasing the mass and cost of construction design is expansion of the production of various types of light cements, which possess high thermal protective characteristics, an increased resistance to cold, and which can be manufactured out of local materials.

In those regions of Western Siberia where there are no large deposits of crushed stone and gravel, effective use is being made of the production of concrete which is made out of sand. Manufacture of such concrete has been undertaken by the Northern Gas Construction Trust under the Main Administration for Construction of Petroleum and Gas Industry Enterprises in Tyumenskaya Oblast, located in Nadym. Expenditures evoked by this increase in the consumption of cement are being made up through the saving of funds spent for the transport of crushed stone and gravel.

A future trend in the creation of new construction components for use on production buildings under conditions which exist in the North is the wide-scale use of light protective components made out of aluminum and aluminum alloys. Their use in place of reinforced concrete will cut expenses approximately two times. According to data provided by the scientific Research Institute of Construction Economics, the future share of construction components made out of aluminum and aluminum alloys under Northern conditions may achieve significant dimensions in the overall volume of interchangeable materials and components.

A considerable effect will be achieved as a result of the creation of stationary support-rear services bases located in uninhabited regions or in centers for the concentration of construction. Use of such bases will allow an increase in the level of concentration and specialization of production, will decrease specific capital expenditures and production costs, and will lower labor expenditures.

It would be expedient to make wide use of mobile enterprises of the assembly-disassembly and container type for the production of cement and mortar, asphalt-concrete, etc. We should also make use of mobile floating housing construction enterprises.

A most important task is the improvement of repair bases, the centralization and mechanization of repair work, and the wide-scale introduction of unit component repair methods. The machinery and equipment which is being used for the erection of petroleum and gas industry installations in Western Siberia, as regards its reliability and the number of people required for its technical servicing, does not in full measure meet the soil and climatic conditions for their utilization.

Equipment breakdown frequency in the Northern regions is too high. There are problems also with the transport of that equipment to repair plants, the unsatisfactory level of centralized capital repairs and the mechanization of repair work. The high expenditure of labor connected with this leads to a significant degree of time in which that equipment stands idle. Improvement of material-technical repair bases, the wide-scale introduction of unit-component repair methods, plus the mechanization and centralization of repair work will facilitate a decrease in the amount of labor and costs and will result in the improvement of the quality of repair of construction and roadbuilding machinery. Being planned within the next few years is completion of the construction of the Surgut Equipment Repair Plant. Similar equipment repair plants are to be erected in the future in Urengoy and Angarsk. Realization of these basic trends in the expansion of our industrial production bases in Western Siberia will allow us to facilitate the supplying to oil and gas industry installations being built there of materials, components and parts in the quantity needed, in the proper assortment, and of high quality. This, in turn, will facilitate a further increase in the effectiveness of construction in this region.

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SIBERIA'S RESERVES OF RAW MATERIALS FOR ENERGY SURVEYED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 6, 1980 pp 7-13, 24

[Article by A. A. Trofimuk, academician, first deputy chairman of SO AN SSSR [Siberian Division of the USSR Academy of Sciences]: "Siberia's Natural Resources--at the Motherland's Service"]

[Excerpts] Raw Materials for Energy

Raw materials for energy comprise the No 1 problem for many countries of the world. World energy consumption has been growing continuously, doubling each 10-15 years, since it is the more energy-intensive branches of industry--the pulp and papermaking industry, the chemical and petrochemical industry, the production of titanium, aluminum, cement and glass, electrometallurgy and so on--that are being developed at the fastest rates. More than 85 percent of the country's energy raw materials--coal and oil, natural and casing-head gas, and hydropower--are concentrated in Siberia. This is why it is justifiable to contemplate development of the more energy-intensive branches of the national economy here in Siberia.

Oil and Gas. The first industrial gas wells, which had been predicted by scientists long before their discovery, and then oil gushers, were driven here in 1953 and 1960. The discovery of oil and gas in Western Siberia marked the appearance in the country's geographical center of a most huge oil and gas base. Even foreign specialists evaluated this find rather highly.

Up to now about 200 oil and gas fields have been found, and each year their number is augmented. Despite complicated geographical and transport conditions, the prospecting for and exploration and recovery of oil and gas in West Siberia is costing the state less than in some of the country's other regions. The relative simplicity of the geological structure of the West Siberian fields, the shallow bedding of the oil and gas in comparison with other oil and gas bearing provinces, and great effectiveness in the use of geophysical (especially seismic) methods of exploration have helped here.

West Siberian deposits in the central parts of the lowland more often than not are multiple-strata fields with the oil and gas bearing level exceeding 100 meters in thickness. In West Siberia the average depth of deposition is 1,700 meters for gas fields and 2,100 meters for oilfields, and the explored fields lie at depths that are less than the average for the country as a whole. The quality of the crude is high. Good permeability and great reservoir pressures in the productive horizons, which are maintained by injecting water, provide high flow rates. Most of this crude is light and is low in sulfur.

There is in world economics no counterpart to the West Siberian region in pace of development: in the last three five-year periods annual recovery of the main type of industrial output--crude oil--grew from 1 to 315 million tons.

The main oilfields tend to be concentrated primarily in the central part of the West Siberian Lowland, and to the south a group of gas-condensate fields is found. The northern edge of the lowland is a gas-bearing province. Here such fields as the Medvezh'ye, which has already been put into operation (gas is being supplied to Moscow across the Ural Mountains), Urengoy, Zapolyarnoye, Vengapurovskoye, Komsomol'skoye and many other fields also are located here. The hugest of them is the Urengoy field, whose reserves in the upper horizons are more than 5 trillion cubic meters. Such a concentration of reserves within one field enables gas recovery enterprises of exceptional capacity to be established here.

It should be noted here that north Tyumen' gas is unusual--it is low in sulfur and it differs considerably from most of the world's gas deposits: it contains up to 89-99 percent pure methane, greatly facilitating treatment and purification of the gas before it is transported over gas pipelines. The forecast geological gas reserves of the lowland is assessed at 40 trillion cubic meters, including 18 trillion in the Tyumen' north.

The value of these northern gas fields lies also in the fact that, although found outside the European part of the country--the main gas consumer--they are, at the same time, situated comparatively close to the central and northwestern regions of it; moreover, deep horizons under the gas beds of the Urengoy and Vengapurovskoye fields contain oil and condensate that raise the value of these fields.

So, there probably is no other type of raw materials, such as oil and gas, whose recovery would be so profitable and important for society, would require such relatively small expenditure of human labor for recovery, and would possess such high productivity, which is especially important for poorly populated Siberia. Capital investment in the oil and gas industry yields net income rapidly. A 1-percent rise in the share of oil and gas in the country's fuel balance leads to an annual saving of 1 billion rubles.

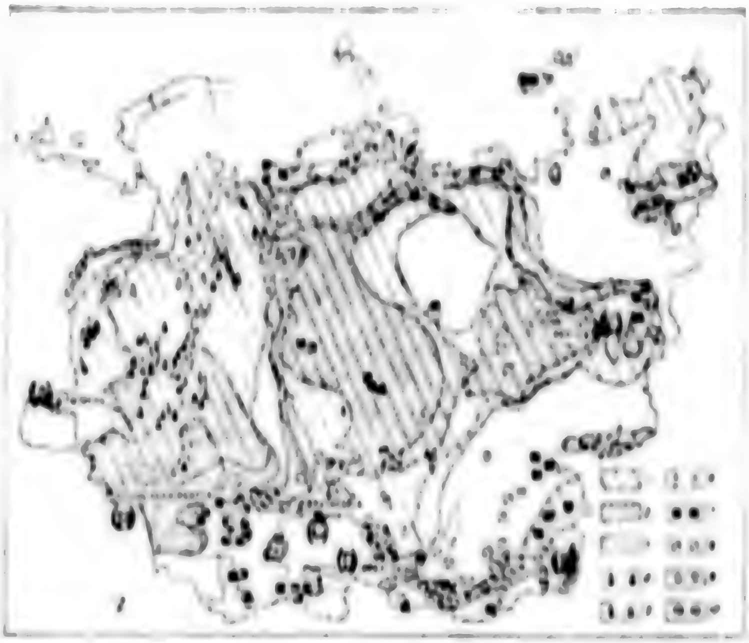
The degree to which land that holds promise of oil and gas has been studied is severalfold lower for West Siberia than the average for the country.

Up to now all the fields of the West Siberian Lowland have been found in Mesozoic sediments (the Cretaceous and the Jurassic), which were formed 100-185 million years ago. In the opinion of some Siberian geologists, the more ancient sediments--the Paleozoic, whose age exceeds 300 million years--also are promising. The first deep holes that were sunk on the south of the West Siberian plate confirm the correctness of the forecasts made, and we hope that the ancient rocks will gladden us still more with new fields.

There are high geological promise and a potential for finding major resources (at depths of 2,500-4,000 meters) on the Siberian platform, especially in the regions between the Lena and Yenisey rivers, and in the so-called Nepsko-Botuobinsky arch. While the West Siberian area that holds promise for oil and gas at the Mesozoic level is 1.8 million square kilometers, the land of East Siberia favorable for oil and gas is 3.5 million square meters in area. But the degree of exploration of East Siberia's land has not been very intense (0.2-0.3 running meters of exploratory drilling per square kilometer). It is natural that, in order to reveal the extent of the presence of oil and gas in East Siberia, considerations of its more complicated structure will require a large amount of geological exploration and the use of highly effective drilling equipment, whose transporters must possess a high capability for cross-country travel. One cannot get along without aviation here, although using it is very expensive. For example, moving a set of drilling equipment 70-100 km costs about the same as the equipment itself; transport expenditures take up 34-50 percent of production outlays in West Siberia, at a time when the share of these same outlays in the corresponding industries of the European part of the country vary within the 5-13 percent range. For East Siberia this difference is even higher. But in order to haul drill rigs without major disassembly, helicopters more powerful than those now used in geological exploration are necessary. Moreover, when hauling great distances, these helicopters, as the geologists say, haul primarily themselves--they carry more fuel than payload.

A large basin of industrial gas condensate was discovered in 1956 in Yakutia (on the lower course of the Vilyuy River). Six gas and gas-condensate fields are counted here. Yakutia's prospective geological reserves of gas are 9 trillion cubic meters. In 1967 the city of Yakutsk began to receive gas from the Ust'-Vilyuy field by pipeline, and, since 1973, gas from the Mastakhskoye and Middle-Viluy fields. Right now the problems of transporting Yakutia's gas to the Pacific coast are under discussions.

The scientific discovery of the capability of hydrocarbons to form solid compounds--gas hydrates--with water at low temperatures and high pressures in permafrost rocks was a great achievement of Siberia's scientists. After beds of solid gas were discovered, they were found in many other regions. The finding of gas hydrates opened up new promise for the use of hydrocarbon raw-material reserves not only of Siberia but also of the planet as a whole.



Siberia's Energy Resources.

Legend:

1. Promising oil and gas bearing regions.
2. Hard coal.
3. Brown coal.

Fields:

4. Oil.
5. Oil and gas.
6. Gas.
7. Hard coal.
8. Brown coal.
9. Existing hydroelectric power stations.
10. Hydroelectric power stations under construction.

A. Tyumen'.	C. Krasnoyarsk.	E. Yakutsk.
B. Novosibirsk.	D. Irkutsk.	F. Chita.

Oilfield workers face the major problem, based upon the newest achievements of science and technology, of increasing withdrawal from reservoirs. In world practice today losses of oil in reservoirs exceed 50 percent on the average. An increase in recovery would be equal to the discovery of many new fields. For this purpose, methods of active stimulation of reservoirs are being used--edge and center-to-edge waterflooding (the injection of water under pressure into the reservoir to move the crude to the well bottoms), hydraulic fracturing of the reservoir in order to increase the flow of oil to the well, an increase of the reservoirs' permeability to oil and gas by loosening them up with acids and other reactants and various emulsions, the injection of hot steam, solutions and water with surfactants that convert the oil into an easily moving state, thermal and physical stimulation of the reservoir, and many others.

Seasonal fluctuations in gas consumption present geologists with the problem of prospecting for underground cavities--gas reservoirs--the establishment of which will enable some surpluses of gas to be concentrated during the summer, to temporarily disconnect some pipeline sections for repair, providing thereby for an uninterrupted supply of gas for the consumer.

Coal. More than 7 trillion tons of hypothetical reserves of coal, which comprise 90 percent of the country's and 50 percent of the world's geological reserves, are concentrated in Siberia. A third of all the coal reserves tends to be concentrated toward the Trans-Siberian mainline. The coal is distinguished by great diversity of composition and properties.

Right now more than 50 percent of the coal is being mined in the country's eastern regions--half of it by strip mining; in 1990 coal mining will increase substantially in the east.

I would like especially to dwell on the better-studied and unique Kuznetsk Coal Basin, where 110 coal deposits are located. The basin's total reserves have been assessed at 725 billion tons, almost half of the reserves being coking coal or coal suitable for obtaining a coking charge. The basin is not large geographically--27,000 square kilometers--but its richness in coal is one of the highest in the world. There are 27 million tons of coal per 1 square kilometer of the basin's coal-bearing area, which is 8-fold that of the Donbass [Donets Coal Basin] and 200-fold that of the Moscow Coal Basin. The coal highest in caloricity (a heat rating of 7,000-8,500 kilocalories) possesses low ash (4-16 percent) and sulfur content (1 percent) and has a good potential for concentration.

Thanks to the high quality and favorable mining-geology conditions of the bedding of Kuzbass coal, it is distinguished to advantage from the coal of all the other basins in economic indicators. Even with long-distance transport hauling, it is more economical (sometimes by as much as 15 rubles per ton) than the coal of all the country's European basins and deposits. More than 140 million tons of coal are now being mined in the Kuzbass. In 10-15 years coal mining by the strip method can be brought up to 80 million tons and, in the even longer term, to 120-130 million tons. Right now an expansion and amalgamation of underground mines is occurring, with an increase in their productive capacity, and underground hydraulic coal mining is being developed. Almost half of all the coal being mined in the Kuzbass is coking coal. There are no larger basins in the world where such high-quality coking coal can be mined from the surface.

One of the largest coal basins in the world is the Kansk-Achinsk Brown Steam Coal Basin (KATEK), with reserves of 600 billion tons (at a depth down to 600 meters), of which 140 billion tons are suitable for strip mining. A deficiency of this coal is its great tendency to oxidize and to ignite spontaneously during storage and while being transported.

The Kansk-Achinsk basin will become one of the largest fuel bases of the USSR. Already its coal is the country's cheapest (2.4 rubles per ton). Here they are planning to establish highly mechanized open cuts of 50-60 million tons and to take from several open cuts of one basin as much coal as is being mined today in the whole country. The coal that is being mined in these open cuts is competitive in cost with gas. Long-range estimates indicate that in the not so distant future KATEK coal mining will reach 500 million tons, with a potential for expanding mining to 1 billion tons. It is planned to promote here the construction of a most huge condensation thermal power station with the installation of power blocks with a unit capacity of 0.8 million kw, the individual stations to have total capacities of 6.4 million kw.

The north of Siberia is very rich in coal, with standard-equivalent reserves of 6,000 billion tons. The world's largest coal basins are situated here--the Tungusska Coal Basin with 2,350 billion tons with a heat rating of 6,500-8,500 kilocalories, the Lena with 1,650 billion tons, primarily of brown coal, and the Zyryanka and other basins and fields.

In the Transbaykal 40 coal fields with total reserves of 18 billion tons of coal, including brown coal, have been discovered and partially explored. Seven of them have already been drawn into industrial production--the Gusinoozersk (a huge GRES is being built there), the Kharanor, the Bukachacha and others.

The South Yakutia Basin should especially be noted. It contains coal of practically all grades, including scarce high-quality coking coal (21 billion tons) which can be mined partially by strip mining. The Neryungri and Chul'man fields, where the coal has a heat capacity of up to 8,700 kilocalories, have been explored. A railroad has already been built from the Trans-Siberian Mainline to this basin, which is a target for initial development on the route of the BAM [Baykal-Amur Mainline]. In Neryungri a large coal complex is already in operation--its full capacity is up to 13 million tons per year (it is planned to reach that level in 1982). A number of highly automated underground coal mines of up to 5 million tons capacity each is planned.

Water Power Resources. Regions of West and East Siberia, including the territory of the Yakutsk ASSR, have at their disposal the richest hydroelectric resources (about 50 percent of the country's potential).

An analysis that has been made of the variants for developing the USSR's electric power potential up to the year 2000 has revealed a high expected requirement for the erection of new GES's in Siberia. It will be expedient to erect about 15 hydroelectric power plants in the next 20 years and to complete practically the creation of the Angaro-Yeniseyskaya GES and to begin erection of the Lenskaya, Vitimskaya and other GES cascades.

The main factor that will increase the effectiveness of the Siberian TPK's [regional production complexes] that are being created on the basis of the GES's consists in specializing them for electricity-intensive production facilities. And here Siberia has no equal.

At present the national economy's requirement in the areas of water use for nonenergy purposes and of water consumption are not being met completely, and this condition is seriously affecting the effectiveness of existing GES's and Siberia's power system. The newly erected GES's should operate in a unified complex with the development of water transport, fisheries, industrial and municipal water supply, and the system of water-conservation measures.

Long-term plans for hydraulic-engineering construction in Siberia should be substantiated within the framework of the overall water-conservation program, which is linked up with the program for developing the region's productive forces.

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NEW CONTROL PRINCIPLES SUGGESTED AS CURE FOR CONSTRUCTION DELAYS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 25, 27 Jul, 1 Aug 80

[Article by A. Chekalin, special correspondent: "Urengoy Arrives at the Target"]

[25 Jul 80, p 2]

[Text] The capricious Pangodka blurred the road in several places, and the powerful "Ural" disappearing in water up to the hood itself barely overcame the obstacles. On the actual route of the power transmission line from Pangoda to Urengoy it could advance at times only with the aid of a tractor: for a half-meter and more it was covered by a layer of frost. Usually in June the support installers are already on vacation, and even now many fellows in the brigade of Viktor Zorin already have their passes to the south in their pockets. But instead of basking at the sea, Volodya Ustich, sinking into the viscous mud in swamp boots up to his waist, measured off a more or less reliable place for the crane truck. Slava Krivoshapko secured the lines to the 40-meter power transmission line support.

"Usually such a line as ours, 120 kilometers long, was made in 2 winter seasons. But Urengoy needs a constant power supply, and therefore the trust Nadymelektroset'stroy (it was formed at the end of 1979) decided to do this in one winter," Zorin explained the situation. "We still have to install five intermediate supports and one anchor, that is the main. This is a day's work. Do not abandon what has been started to the very end."

Carried away with the conversation, Zorin at the same time observed grippingly how the preparation for the lifting was going. It was easy to be convinced that each of the 12 members of the brigade knew his place precisely and his duties in this operation. When the brigade foreman gave the command, when motors of the two paired bulldozers started up,pulling the cable thrown over the crane of the crane truck no commotion or hurry was felt. Everything seemed so simple from the sidelines! But one has to have, most likely, the special art of driving as Vladimir Malyshev, the driver of the "Ural" in order not to pull the insurance cable too much or too little, otherwise the support will not be kept in the vertical position and will fall.

"See, it is standing like a beautiful girl," says Zorin, looking at the support while his comrades prepare to move to a new marker. "Soon we will start the anchor. That is more like a grandfather, squat and thickset like me."

Setting the support of course is not the whole power transmission line. But perhaps in July-August when the swamps get a little drier the installers will succeed, if only with the help of a helicopter, in stretching the conductor to the end. And there you will see, a floating power plant "Severnoye siyaniye" will begin to operate in Nadym, and Urengoy will receive reliable energy supplies. This means that drilling machines with electric drive that have already been supplied by the gas workers can be installed and the scarce diesel fuel can be abandoned.

As quick as lightning, in 2-3 months, the tundra has been riddled with seams of supports and silver threads of wires; the builders could hardly have succeeded without aviation. They recall with special warmth here the commander of the "Mi-8" helicopter crew Gridnev. Adol'f Vladimirovich especially asked for the assignment from Makhachkala to the north, when he found out that they needed helicopters there.

"You see how the lads below, in the swamp, are assembling the supports with difficulty, and how you want to jump out and help them," relates the "air cab driver."

"But he is not required to jump," adds Zorin. "But he can help from the air, it is only necessary to place one part of the support next to the other to a T, upper, middle and lower. This operation he performs marvelously. He places them like a baby in a cradle."

Urengoy is waiting. The concern of putting the world's unequalled gas condensate field into rated output troubles not only the builders of the power transmission line. The drilling brigades are preparing more and more new well clusters. From here the blue fuel should flow on special collecting mains to the units of complex gas preparation (UKPG), and then on the main pipes to the consumers in different parts of the country. Three units are already in operation. Soon the trust Urengoygazpromstroy has to put the fourth UKPG into operation, and at the end of the year the sixth (the fifth is being constructed by their colleagues from Nadym). And as a minimum of twice a week the newly appointed (only a month) head of the trust, Alim Grigor'yevich Dybrin is sent to the construction site.

The tundra is speckled with saucers of numerous lakes and oxbow lakes, and is cut by rivers and streams of the most fantastic configurations. But there are also impassable places where the larch grow and the lichen shine silver. Swamps! It seems that the only dry island among them is UKPG-4 where the shop housing and the auxiliary facilities have already been installed. The name "island" is suitable since the overflowing rivers in several places have broken through the causeway, and the only means of communicating with the Novyy Urengoy settlement remains the helicopter.

For a long time on this Saturday Dybrin together with the foremen, men in charge and heads of the general contracting and subcontracting administrations have travelled around the construction site. I waited for some kind of outburst: the installation of the intershop pipelines has been dragging on; they should have been done in the first place. And the boxes shining in the sun were not joyful to see: some boxes were standing at the site without filling, without equipment. But at the general operations post he remained composed, even cold. How could the new administrator be infected with calm and efficiency and forget about the mutual claims, and the lack of preparedness of the work fronts and the subcontractors.

But Dybrin looked quite different at the meeting with the brigade foremen and the line engineering and technical workers of his subdivisions.

"We can still succeed in receiving gas in the new unit in June," his voice rang excitedly in the foremen's room. "But for this we need to roll up our sleeves, forget about days off and flights to Urengoy. We need super-intensive work because UKPG-4 is the only possibility of increasing the supply of Urengoy gas to the country."

I will not hide the fact that not everyone could be pleased with this appeal, the more so since many people were waiting on the helicopter pad for opportunities to fly to the settlements to see their families. But the brigade foremen in their speeches spoke only of obstacles in the work. After writing down their remarks the administrator summed up:

"Tomorrow and the day after tomorrow I will try to meet and discuss the tasks with our entire collective. Now I ask you yourselves to speak with the brigades. The situation is alarming. It is embarrassing if we have to break another start-up schedule. Tomorrow in addition to the contract work, each brigade will be issued calendar assignments. I would like to stress once more: today we are almost not being held up by either materials or structural parts. Today the start-up depends only on us."

The crimson red disk was almost three-fourths hidden below the horizon, and stopped as if perplexed why the temporary builders' settlement was not at all quiet. The workers did not think about going to sleep. In the light polar night (one can read!) Nikolay Tishchenko, having rested a trifle, continued to run the levers on his 400-horsepower bulldozer, moving the melted ground from the site where yet another collector main pipe has to be laid. Then, thrusting the nose of the bulldozer a meter-1.5 meters he will start to break up the permafrost. Soon after another shift the brigade of Nikolay Kugtikov will arrive: at the operations post they decided to lay part of the collecting main quickly at the planning mark, without waiting for Monday, otherwise the excavator following behind the bulldozer will not have anywhere to put the soil.

This is life not only for this construction site. Later I had a chance to be in the trust Urenglytruboprovodstroy during the testing of the second phase of the Urengoy-Vungapur pipeline. The deputy administrator Valentin

Ivanovich Lisovskiy every now and then seized the microphone: there was no connection with the southern section. Suddenly there was a flaw or something worse--a rupture in the pipe?! The concern of Lisovskiy is even more understandable since he was the special representative of the trust in the construction of this section. Here the first junction was welded, and the pipe was first laid into the trench.

"Until now it was not believed that a quite new trust, still being formed, was able in one winter season to penetrate 300 kilometers through the tundra," he admits. "I think the performance was helped by youth. Only young leaders and specialists on the line could have withstood the many months of working on one and a half and more shifts, forgetting about the most basic goods."

The third construction site, and for the third time, like a refrain,work with super effort, has been given an important place among the components of the successful development of the Urengoy field. In only 2 years, almost 2 times faster than at Medvezh'ye, the 50 billionth cubic meter of gas has been extracted here. It is planned to obtain the next 50 billion already in 8-9 months, that is in February of next year. The impetus to break through to the north, and everyone here understands this well, is supported in the first place by the increased economic potential of the country that makes it possible to rapidly solve major economic tasks. For the accelerated development of the West Siberian oil and gas complex the state has allocated enormous amounts of material and financial resources. The builders here, like nowhere else, are equippedwith the most advanced equipment. However, another fact raises no doubts. The entry to the new fields in the extreme tundra conditions hides many unpredictable situations. And here the most complete giving of self is needed in order to stabilize the course of the construction work.

But do we stress "labor enthusiasm" too often? Of course, such a style of work is effective, but is it always effective? These are not idle questions. We are forced to ask them even if only for the fact that no matter how rapid the economic breakthrough to the north, it is less than initially planned. And in the 11th and 12th Five-Year Plans the rates for increase in gas extraction at the Urengoy and adjacent fields has to be even higher. In a short time the city of Novyy Urengoy should become the largest industrial and cultural center in the northern Tyumenskaya oblast. The successful resolution of these tasks is possible only with correctly selected strategy and tactics in developing the region.

Therefore we do not leave the conversation on the effectiveness of today's style of administration where constant overstrain of forces is permitted. But more about this in the next correspondence.

[27 Jul 80, p 2]

[Text] The tundra is not very adapted for normal working and living conditions tions of man. There has to be more organization and consideration for the extreme conditions in the actions of the participants in the development of the Urengoy gas condensate field. Otherwise they will have to spend day and night at the construction site and super exertion of effort is required in order to compensate for the consequences of poor organization.

We will return to the examples from the previous publication.

On that day the brigade of Viktor Zorin was able to install only two supports of the power transmission line. The neighboring brigade did not succeed in assembling the remaining four.

"Well, are we going to finish the work today anyway, eh?" Zorin either urged or asked the fellows who were assembling the anchor.

The crew foreman wearily waved his hand: there is too much work in adjusting the holes, and besides the people had not eaten. It was thought that if dinner was delivered here to the line, if their neighbors had a leader capable of exciting others as Zorin does his brigade, most likely his appeal would have been heard. Alas, the next day the installers in their "Ural" literally had to rip up the tundra. And who knows how many decades are required for the land to heal the deep wound with lichen moss. Or whether it will heal at all.

I have touched upon the theme of environmental protection for a special purpose. Not today, but tomorrow and the day after tomorrow the demand will increase for an answer to how humanely man acts towards nature in the tundra. Then he will have to willy-nilly review his tactics. And there is no doubt that the line construction like the erection of the power transmission line or the pipelines will begin to be carried out mainly in the winter when man's presence here is less destructive. This is quite real, namely, to riddle the tundra for 100-200 kilometers with seams of supports and silver threads of wires in 2-3 months of winter. And without any special heroism.

The same brigade of Viktor Zorin installed up to 20 supports on certain days. There is a total of about 300 of them on the power transmission line Pangoda-Urengoy alone. We throw out the certified days, make corrections for other surprises and will do only 10 supports per day. This means the brigade could cover the route in a month. And it would have covered it, the brigade believes if it had not been held up by the support assemblers at the markers, and the assemblers--by the brigade for foundation and foundation mat preparation, and all of them--by poor supply. We will also name the operation to clear the way and to install the wires--this is the entire technological cycle of erecting a power transmission line. It is ideally suited for introduction of line methods of construction, right?

Essentially the mechanized columns in the trusts of Elektroset'stroy were precisely created in order to realize this idea in practice. They were further made into various auxiliary services and the order portfolios overflowed. Therefore the mechanized columns were forced to go to the new sites with smaller forces. They had to abandon the line idea in practice. The trust Nadymelektroset'stroy on the Pangoda-Urengoy power transmission line did not succeed in executing it completely. It was necessary to adjust all five lines on a single daily rate after giving them the necessary (and perhaps, even with a certain reserve) amount of equipment and work force. It did not succeed: the brigade of Zorin moved at a rate not of 10,as they could have, but on the average of three-four supports per day.

They were obstructed in the first place by discrepancies in the supply. When the trust was set up at the end of last year and its leaders decided to lay the new power transmission line at a high speed,only 100 supports were assembled at the test site, and 200 others or the intermediate products were still at the plants of metal structures a hundred versts away, or there were no funds at all. In the end, the supply service, showing resourcefulness was able to deliver metal and wire to Nadym by the end of May. But it was late, Zorin had already succeeded in breaking through, and the assemblers of the wires were stopped halfway by the revived tundra.

And if the situation with the materials and structures had been favorable? It does not matter, they believe in the trust, the line would have been subject to serious disturbances. Supplies are not the only problem. But we will set this conversation aside.

The line idea is close not only to line construction in erecting power transmission lines, pipelines, automobile and railroads. Take the unit of complex gas preparation where the gas is dried, purified of mechanical admixtures, the temperature is lowered, and then it is sent to the consumers. Construction is ending of the fourth and fifth, preparatory work for the sixth is underway, and ahead there are two more UKPG [unit of complex gas preparation]. The units are standard. All the main participants of the construction are included in one ministry or even central board. All have known each other for a long time, and know when and what volumes of work need to be done. Nevertheless there are discrepancies and disagreement over measures.

Let us go to the structures made of aluminum panels from which a cosmic radiance directly emanates. These are the auxiliary facilities in block-set design: the pumping station for methanol, fuel and lubricants, sewage unit, transformer substation, and general buildings. We look inside. Empty. The plants "Sibkomplektmontazh" not only had to make the frameworks, but also fill them with equipment. The idea was to then deliver the block-boxes to the site, connect them to the pipelines and everything could start working. Alas, at the UKPG-4 it is still a very, very long way to the set-block method of construction as an organic supplement to the line method. They fill the block-boxes here at the site.

At times the situation reaches plain absurdity. "Sibkomplektmontazh" fabricates, delivers and installs the safety panels for the production shop housing. Then the brigades of Urengoygazpromstroy arrive, secure the laths from the inside, secure the Rabitz wire netting to it, and with the help of wet or dry plaster begin to warm the panels. As they say, it all comes out even in the end: some have super expensive but not very difficult work, others have inexpensive but manual operations.

"Sibkomplektmontazh" explains: we would be glad to send the blocks completed, but the customer, Ministry of the Gas Industry, delays in sending the equipment; it has long been time to send our association the funds for it, but this matter has not been resolved. It is indisputable that an improvement in the order for delivering equipment is an urgent task. But one can hardly doubt something else: if the delivery of empty block-boxes had a painful effect on the economic interests of the "Sibkomplektmontazh" workers, the"emptiness" would be filled at once.

The following question is natural: how close are the goals of the general contracting organization and the subcontracting subdivisions? Of course the machine operators of Tyumengazstroymekhanizatsiy, and the installers of the Tyumenneftegazmontazh and "Sibkomplektmontazh" would answer: our goal is also the timely introduction of the facilities. Is this true?

It is easy, for example, to guess which decision the head of the mechanization administration would make if he has the choice of sending the excavator to dig a small trench that is holding up completion of work at the start-up facility, or send it to a new site where no one interferes with the fulfillment of a large volume of work. Of course he will send all forces to the second goal.

As is known, the goals at the same time serve also as criteria by which it is determined how successful the activity of the organization is. But where is it seen that the machine operator, driver or installer are administratively or economically punished for an interruption in the work to put a production plant into operation? Nowhere, for all the blame is put on the general contractor for the interruption, and the subcontractor is threatened with unpleasantness only for a shortage of cubic meters, ton-kilometers and volumes of construction installation.

The further specialization goes, the more independent specialized organizations are spawned, the more difficult it is to construct bridges between them. The authority of the head of the administration is no longer sufficient to coordinate their actions; the deputy administrator of the trust is sent to the facility. Where he himself could cope,one of the leaders of the central board is in command. And so on and so forth. This process is far from harmless. It has at least two negative consequences: minimization of the role of the middle link leaders and disproportion in the correlation of rights and duties, that is, erosion of responsibility for a specific matter. And that is why it often happens that some have great rights and no responsibility, while others, on the contrary, have a lot of responsibility and curtailed rights.

With the introduction of the "institute of special respresentatives" there has been even more duplication and confusion in the functions of the administrations and trusts. Statements have even appeared on the poor training of the middle link commanders, although most often their poor work is explained by the lack of the proper rights, administrative and economic in order to act on related organizations.

But the establishment of curators, representatives and heads of the start-up complexes and headquarters is not somebody's whim. This is a natural phenomenon in today's conditions. One can even say that this is the precursor of a new principle of construction control, programmed-target, of which we will speak in the next correspondence.

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[Text] No matter how paradoxical, the realization in the near future of the idea of line construction under the most difficult conditions of the northern Tyumenskaya oblast is even more real than in other places. For example, although the delivery of freight here is linked to numerous reloadings: railroad--river--winter road, all that is needed can be brought to the bases at once for the entire year. For a 300-day supply of materials has been set for the northerners. Another favorable factor is the block-complete method of construction in which the equipment should be completed at the plants in Tyumen', and is sent in blocks in the tested form to the construction site. However, until recently the line idea realization was obstructed by the noncoincidence of interests of the participants in developing the Urengoy gas condensate field, and the imperfection in today's administrative structure.

But today there is already a force that is making the possibility become a reality. In accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers on improving the economic mechanism the evaluation of the activity of production collectives should be made according to the commodity output. For the machine operators, this will be, say, the set of mechanized work on the UKPG, for "Sibkomplektmontazh"--a full set of work with regard for installation of equipment under plant conditions. And for the trust Urengoygazpromstory this means the entire unit of gas preparation.

At least this is how the director of the production association "Urengoygazodobycha", Lenin Prize winner Ivan Nikiforovich Nikonenko thinks:

"It is impossible to be content with the order when the builders erect only a trifle without which the field simply cannot operate, and then leave. I am no longer speaking of the general buildings, housing, even the station of cathode protection that remain on the list of unfinished projects. They hurt themselves (the forces are then dispersed, for they still have to complete the work), and us, the users."

Recently the trust "played out" the situation that developed last year and worked on the 1981 system that they soon have to switch to. The result was losses, defaults, and lack of funds for economic stimulation. Of course, they succeeded in correcting something and abandoned the explicitly rude work. In 1979, one of the administrations, for example, made more than a dozen unplanned facilities. Now to work "by the bells" from organizations that are not directly responsible for the introduction of facilities means to put yourself into a debtor's hole. But do many of these "explicit" reserves accumulate?

Ah, if only we could successfully work for a while for the future! First of all the in-house production base would be strengthened. For from the 35 million rubles released for the program to increase the annual extraction of gas to 30 billion cubic meters, and for the creation of the pioneer section only 10 have been spent. This is that saving that goes to the side. The storage bases in Novyy Urengoy, Nadym, Samburg and Labytnangy did not come to mind.

There is yet another sad consequence of this saving, the appearance of "Nakhalovka", the settlement that was erected on the principle of "self-construction." For in building housing for themselves from materials taken from somewhere the creators of "Nakhalovka" hardly put in intensive work at this time at the gas field facilities for the sake of which they had been invited here and paid a lot of money. By the way, the more or less everyday settlement made of "beams," "barrels" and trailers also does not especially reinforce in the people a feeling of being settled which is a mandatory element in creating stable working collectives.

A decision was recently made to accelerate the construction of housing and social and cultural facilities in the region. Houses will be built here by in-house forces in greater scales; for this purpose, several administrations of Urengoygazpromstroy have been formed into a trust of housing construction. The people of Urengoy will receive considerable help from the collective of Glavleningradstroy, that this year already should erect 30,000 square meters of housing and another 100,000 in the next 2 years.

In order to accelerate the creation of a production base, the trust Urengoygazpromstroy has decided to take into its hands the functions of customer (previously this was the function of the board for development of the field). Undoubtedly, with the introduction of a controller, improvement in the freight hauling this will help to bring closer the birth of line-production to construct units of complex gas preparation, compressor stations, and other gas extraction facilities.

They will not only bring it closer. As practice shows (although as yet not always successful) in the construction of nuclear power plants and the Ekibastuz GRES, in order to completely realize the principles of rapid line construction a radical reconstruction of control,its technology and structure is required.

One can ask: why does the structure need to be rearranged? If there is success in improving the supply, creating a good production base, and directing the economic interests of the related organizations in attaining one goal, one final result, then nothing will interfere with setting up the line. However, the diagnosis of malfunctions and losses is convincing that under these conditions the line-production will be exposed to disturbances. Today's system of so-called limited functionalism does not permit precise regulation of the rights and responsibilities of the control services, assessment of their work according to the final result for production, and removal of the chronically unsolved question of all planners "Who is guilty?" If responsibility for a specific matter is not increased,then this means now work will continue with super intensity,now it will not continue at all.

Today science is in the condition to give quite precise recommendations on how to reconstruct control. Moreover, the specialists of the USSR Ministry of Power and Electrification, for example, already have detailed developments on this. Their content requires a special story; we will limit ourselves to a general survey.

Control must be constructed based on program-target principles. The target programs regulate the timely and high-quality adoption of solutions (who, what, where, when, how much and how) at all stages of construction--from the preparation of documents to "locking the door" on a completed facility. Programs of three types are defined: functional, production, as well as of technical and social development. Each is headed by a leader. Naturally each program has its structure, but all of them are interlinked based on the matrix structure.

Planning, calculation and control of the activity are carried out according to the final results (goals), not from the attained level, but the complete use of the trust facilities. Analysis of losses is the basis for evaluating the work of the subdivisions and functional services.

The new structure of control requires the abandonment of many stereotypes. For example, the challenge to the customary one-man management is the principle of double subordination to the leader of the production target program (he is responsible, for example, for the construction of power transmission lines) and the leader of the functional program (he is responsible for the condition and use of the equipment). Or take the prestige of the office. The head of the mechanized column (today these subdivisions are being eliminated) sounds weighty. And the leader of the target program? "I disqualify myself as a leader," one of the specialists told me with anxiety. "I am becoming a regular executor." In a word we have a problem.

There are many such problems that have to be solved before the new structure becomes a fact. But we cannot give way. The introduction of the new structure, without an increase in the standard number of personnel and expenditures for maintenance of the managerial apparatus,according to the calculations of the specialists will increase labor productivity 1.5-2-fold.

Naturally the realization of the new prinicples is impossible without their experimental verification. Life dictates that both in the Ministry of Power and Electrification and in the Ministry of Construction of Petroleum and Gas Industry Enterprises there should be a certain service that would be responsible for organizing "reconnaissance of the battle," control of its carrying out, analysis of the experimental results (here both the positive and negative results are important) and determination of the future fate of the innovation. For the economic search also needs to be controlled, and on the level of the ministries and other higher economic instances.

We will summarize. The rapid development of the Urengoy and adjacent fields in the northern Tyumenskaya oblast is impossible without a sharp increase in the construction and installation work. One can, of course, mechanically increase the output of the contracting organizations, but this requires enormous additional outlays: for in the conditions of the extreme north the development of one person requires about 5 times more resources than, for example, in Tyumen'. And it should also be taken into account that the specialists do not come here alone, but with their families. Another two-three workers are needed for the service of one person. An avalanche-like process is born of an increase in the number of personnel of the nonproduction sphere.

The solution, consequently, is different: by gradually increasing the output of the contracting organizations the main stress is made on improving the efficiency of the construction industry. This can be attained if the idea of the high speed-line, set-block and watch methods of construction is completely realized. However, today's system of so-called limited functionalism, as already stated, is not very adaptable for the fulfillment of this task. Control according to goals, that is, the transition to the program-target principles of control is what is necessary for accelerated development of the unique Urengoy field.

The new system of control--according to goals--will simultaneously help to instill everyday industriousness, creative fulfillment of duties, and in the final analysis, achieve discipline and order in each link, and at each work site. Under such conditions the labor enthusiasm will multiply by 10 the efforts of the builders, and will create true harmony between the interests of production and the people.

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FUELS

COAL MINING MANAGERS DISCUSS MANAGEMENT PHILOSOPHIES

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA in Russian No 6, 1980 pp 129-147

[Interviews with Yuriy Nikolayevich Malyshev, director of the Zyryanovskaya Underground Coal Mine of the Yuzhkuzbassugol' [South Kuznetsk Coal Basin Production Association], and Vladlen Danilovich Yalevskiy, general director of Yuzhkuzbassugol', by M. K. Kalmyk and Ya. P. Voronov: "Enterprise and the Economic Mechanism--Two Interviews on an Old Topic"]

[Text] Ten years ago EKO [EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA] published information about the Zyryanovskaya Underground Coal Mine and its director, Vladlen Danilovich Yalevskiy. The mine director's story about his work was close to the heart of the discussion that we are now conducting today. The enterprise and farsightedness of Zyryanovskaya's director gave rise to numerous readers' comments at the time.

Ten years is no short period. During this time V. D. Yalevskiy became general director of Yuzhkuzbassugol' and Yuriy Nikolayevich Malyshev, an adoptee of the Zyryanovskaya collective, became mine director. The two interviews--with the old and the new directors--indicates to us how notions about enterprise and the economic mechanism in the supervisor-production worker environment have been expanded and are gathering strength.

Much of what the two managers from the Kuzbass are saying has already been considered in the decree of the CPSU Central Committee and the USSR Council of Ministers, "On the Improvement of Planning and Strengthening of the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality."

This is also a conversion of production associations (or enterprises) to direct continuous communication, and a strengthening of the role of long-range planning for economic and social development, and much else. We shall see how deeply this decree meets the psychological orientation of modern supervisors and their ideas about the mutual relationships of enterprise and the economic mechanism.

[Interview with Yu. N. Malyshev, director of the Zyryanovskaya Underground Mine of the Yuzhkuzbassugol']

EKO: Yuriy Nikolayevich, the decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 said much about intensifying the role of long-range planning. Are there difficulties of any kind in allotting your worktime to the solution of current and long-range tasks?

Yu. N. Malyshev: The trouble here is not so much my worktime as the possibility of being occupied with the long term. Mining at our undeground mine is growing at a more rapid pace than at neighboring mines. Vladlen Danilovich Yalevskiy used to strive for it, and I also am trying to adhere to such a policy. But, like anyone who works with more initiative than others, we always have the apprehension that our initiative will be "punished." This fear is based on not infrequent cases of unexpected raises in plan tasks.

If all the rules of the 1965 reform were adhered to, if we had a firm five-year plan, we could work systematically and effectively on the future of the mine. It is this aspect of the decree that is most important for us. Under a stable five-year plan, it is clear what must be done to fulfill the annual plan, and what can be focused on providing a start for the long term. It is impossible to be engaged seriously even in eliminating bottlenecks if there is no stable plan. We have, for example, a bottleneck in transport, but it is impossible to engage for a long time in improving its operation since with each revision of the plan we have to redistribute people and funds all over again.

All this, I repeat, is accompanied by a dread of "punishment" for the successes achieved. By carrying out the next revised plan, we can put ourselves in such a position that it will be entirely impossible to be engaged in anything about the future at all. It is because of such factors that the tendency to conceal internal production reserves arises. So our minister, on going to Gosplan, takes on the role of our protector. He argues that the coal industry is operating under constantly worsening mining-geology conditions, so the plan should require less output and provide more funds. When the ministry receives the plan the association's general director begins to assume the role of our protector, and so it goes, right on down to the section. Work volume depends upon the success of this defense, and this cannot help but affect the possibility of being concerned about the long term.

There is little desire to be concerned about the long term, because funds for capital investment are needed. Here there is astonishing "stability."

You get only what has been planned, to get more is impossible, and there are no amendments. And if new technological solutions appear, then you should either ignore them or wring them out of the basic workers, operating costs, and so on.

EKO: Indeed, is it possible to come to an understanding that if there are no amendments or if there will be additional capital investment, then there will be additional tons of coal?

Yu. N. Malyshev: Whom is there to come to an understanding with? This would be a departure from existing planning practice. It seems to me that the decree adopted will be used to accommodate us here. We would be ready to come to such an understanding, but both the plans and their revisions come down from above as directives, without granting an opportunity of any kind to concur.

The main defect of planning, the main thing that attacks the throat of being enterprising is planning in accordance with the level achieved. The Nagornaya Underground Mine works near by. It works well, with respect to the mining-geology, and it is close to Zyryanovskaya in size. But while Zyryanovskaya has for many years been among the best, Nagornaya was all this time among the simply good. And as a result, at Zyryanovskaya each person descending underground produces 150 tons of coal per shift, while at Nagornaya the figure is 110 tons. The strenuousness of the norm at the Zyryanovskaya is higher than at the Nagornaya. The Zyryanovskaya collective is strong, it carries a lot on its shoulders, and it can undertake to adopt additional commitments and the concluding of supplemental contractual relationships with state organs at any level. But such an agreement must be observed by both sides, and that is not the case. For example, in 1978 we made a special effort and received additional resources for the material incentive fund, but then the association withdrew 100,000 rubles from the material incentive fund and redistributed it to other mines without any discussion of any kind. People should be the owners of the money they have earned. This is the meaning of the principle, "to each according to his labor."

EKO: And economic levers? Prices and standards--they should encourage intense work....

Yu. N. Malyshev: Between "should" and actuality there is a gap, they say. We have one of the lowest operating costs for coal in the country--5.5 rubles per ton. We sell it for 9 rubles. And what do we have because we are among the best mines in profitability? In planning standards we are equalized with other underground mines in all types of material incentives. If we could come to an agreement with someone that for one month we will not produce one ton of coal, then the next month we will give 1½-fold more! During the month we could take the necessary steps to reconstruct the workings, throwing the efforts of the entire collective into this.

If you think that mining the same amount of coal each month is required because of uniform shipment of coal to consumers, then you are deeply mistaken. Mined coal is first heaped up at the upper storage. The rhythm of shipments that are made from this storage facility is not connected at all with the rhythm of mining. For some reason or other it does not suffice when we report to the planning organs that the upper storage is full and that shipments can be made regularly, at the maximum rate. They have to know how much coal will be loaded at this storage next month. There is no benefit of any kind in this plan indicator. It only makes the work difficult, and sometimes it disorients the collective in its basic production tasks.

The main thing, in my view, is to provide for uninterrupted deliveries. Each day we should ship 7,500-8,000 tons of coal. This is the collective's basic task. But it also happens that the railroad has interruptions because of cars, and the upper storage is overloaded with coal, and there is danger of spontaneous combustion, but we are obligated to mine because there is a plan for mining. You can imagine, besides everything else, the educational work that must be conducted with the miner whom we call upon to overfulfill the norm, while he, with his own nose, senses the smoke from the upper storage. In 1978, during the difficult winter, when the whole world was experiencing the most severe requirement for fuel, we had several thousands of tons of coal burning, and we compelled the workers to work overtime and on off-days in order to carry out the socialist commitments for mining. During those days the workers repeatedly came both to the board and to the party, requiring an explanation of the absurd situation. There was one explanation: we have been obligated to carry out the plan and the commitment for mining at any price.

EKO: But these thousands of tons could have been sent to soneone before they started burning....

Yu. N. Malyshev: You forget that we do not have direct communications with coal consumers. Another organization--Uglesbyt [Coal Marketing Administration]--is engaged in coal marketing. It breaks down the orders--where and to whom to ship the coal. Within that organization there is no talk yet about incentives or about the brigade contract. Therefore those lines of the decree that speak about responsibility and material motivation for supply and marketing organizations and planning organs for the quality of their work are especially important to us. It is more interesting to work with a motivated partner.

EKO: The impression can be gained that insurmountable barriers have been set up here for initiative and enterprise?

Yu. N. Malyshev: As long as the plan indicators just stand by themselves, the main purpose of the collective's work will not be clear, and the enterprise will not be aimed in the necessary direction.

We have established here a million-tonner brigade, a brigade that produces more than 1 million tons of coal per year. The undertaking that we have supported is extremely important for the extracting industries. We understand its usefulness. But it is not just because of this alone that we went for it, and, it stands to reason, it is not because the newspapers will say nice things about us. Last year when I raised the question about establishing the brigade, many ETR's [engineers and technicians] of the mine were against it. Some considered this to be "show," others thought of it as an unjustified and excessive growth in the workload for one mine face. And we came to a unanimous opinion only when it was understood that if we ourselves did not announce the million-tonner brigade, we would not receive a new longwall mining complex, would not be given a new conveyor and would not be given new conveyor belts, but we would have to work with the old equipment. And we handled the matter ourselves. And such an undertaking as the million-tonner brigade enabled us not only to obtain the longwall mining complex but also to support stable operation in 1979. We began to work more confidently, since we have a mine face that will cover any possible stoppages at other mine faces for modernization or rebuilding.

It is in this way that we are solving the problem about which I spoke: how to make it possible not to work the whole mine for a month, so that we can produce 1½-fold more later. And right now we are creating a second million-tonner brigade.

I will return to the question about marketing. When a third party interferes in the matter and is, at the same time, an organization without incentives, it is impossible to count on the work's being successful. I think that the association should conclude direct contracts with consumers. The decisions of the party and the government on the economic mechanism orient us to this.

The requirement for our coal is such that we will be able to obtain both the necessary materials and the equipment. For three above-plan cars of coal we can obtain one above-plan tractor. There are reserves here for developing initiative and enterprise on a countrywide scale! When such a possibility exists, matters will go on appreciably better. I can point to the experience of our mutual relationships with a sovkhoz that we sponsor. There is always the possibility of concluding contracts for what we need and for what they need.

There are also, of course, such organizations as schools that cannot give anything for coal. Mandatory shipments should apply only to such organizations. The initiative in creating new interrelationships with consumers belongs to producing enterprises. Services have been established at Novokuznetsk metallurgical combines that study the ability of metal customers to pay. And the metal will not be shipped if it is known with precision that it will not be paid for that month. While we have often fallen into a difficult situation with our coal customers. Coal has been shipped through Uglesbyt and we did not receive payment. The response of financial channels to unpunctual payers is practically nonexistent. This forces enterprises to establish services for studying the customers' ability to pay.

EKO: Yuriy Nikolayevich, I would like to move over, nonetheless, from current problems to your work for the long term. When EKO published the article about V. D. Yalevskiy 10 years ago, his concern for the long-term development of the mine especially aroused the readers' interest.

Yu. N. Malyshev: You know, I can scarcely say anything here that is typical for our industry. The whole burden of concern about the long term for me is that the mine does not have a future....There are coal reserves for no more than 8 years. There are large fields around us, but they have all been released to the development of hydraulic mining. Therefore, over the long term, major growth in mining volume is practically precluded for us. There remains the improvement of technical and economic indicators, and we have begun to advance along this path. The next goal is to achieve a level of mining of 200 tons of coal per shiftworker.

According to the plan, the Zyryanovskaya and Novokuznetskaya mines were established to work local fields, after which they should be closed. I do not know who thought this up; maybe, despite the unusualness of such a decision for our economy as a whole and for the Kuzbass in particular, such a decision is correct, but my doubts linger.

I was recently talking with one very responsible comrade from the ministry. We had a heart-to-heart talk. And I asked: "How correct is it to adopt a decision to close a mine whose collective has been awarded the Order of Lenin?" And he answered me: "It happens that even Heroes of the Soviet Union die...." At that, you know, I waved my hands. Indeed, is it possible to convince such a person of anything?

Our work task for the long term consists in preserving the collective. And we propose even now to begin to develop another deposit--the Il'inskoye field, which is 50 kilometers from the existing mine--with the rotating-duty type method. We want to begin this in order eventually to gradually transfer the whole collective there. We are striving to be authorized to make our home there and to open up a section of the mine. This is for us right now the job for the long term, after 1985.

[Interview with V. D. Yalevskiy, general director of the Yuzhkuzbassugol' Association]

EKO: Vladlen Danilovich, you were promoted to a new level, but the Zyryanovskaya mine officially, and, we think, in spirit, is still in your thoughts. What has changed at the mine?

V. D. Yalevskiy: A constant state of search is characteristic of the Zyryanovskaya mine. A search of many years for new organizational forms for management and production and for technological variants thereof. I think that this constant striving to find out or to work out and introduce something new remains a distinctive feature of the Zyryanovskaya's collective.

It seems to me that after my departure the mine began to operate more interestingly. I worked at it for 15 years, and it is natural that in the last years many things had become familiar, or ordinary. But it was difficult to stay in good shape all the time. Yuriy Nikolayevich Malyshev, a young engineer, candidate of engineering sciences, and an adoptee of the collective, took my place. So there is a definite continuity in the shifting of supervision there. But there is a young fervor and a somewhat different perception of affairs than mine. Since each supervisor possesses his own individuality, then, of course, Malyshev supervises in a way different from mine.

He is showing good results, and the Zyryanovskaya mine continues to be included in the association's best mines. The directions themselves of the search for new forms are unlike those that existed previously. The large-scale conclusion of agreements between interdependent activities is under way. A central figure of this measure is the brigade leader, the representative of the primary production collective. Agreements between many interdependent brigades are being signed in formal ceremonies.

It is here that the interests of centralized planning and the interests of the individual workers are reduced to one point. Yu. N. Malyshev, working in his own way, is finding new directions. But it is not just a matter of new directions. It is necessary to be on a par with recent achievements of technical progress. It is versatility that distinguishes the good supervisor with initiative. Yuriy Nikolayevich, as I have already said, is an adoptee of the Zyryanovskaya collective. He went there upon completing the vuz, passing through all the stages of supervision in the enterprise. He has definitely synthesized that spirit of the collective that EKO has already written about. Therefore, with the arrival of the new director there, affairs deteriorated in no way, but, on the contrary, were further developed.

EKO: And so you have cited still another example of those who have already been publicized by us in our journal. The moral of such examples is: the supervisor who has worked at the given enterprise will show the best results, as a rule. When you pronounced such words as, "synthesized the spirit," something concrete stood behind them?

V. D. Yalevskiy: I would suggest to you still another journalistic cliche: "emerged from the innards of the collective." But even behind this cliche stands, as you say, something completely concrete. It seems to me that the central factor here is that the future director should obtain his first qualification rating as an engineer or technician at the same enterprise. There is no definite rule here about where he will work then. The future supervisor receives his first push in the collective. Moreover, the shaping of his character as a supervisor has begun. Superimposed on this are his personal traits and his personal mannerisms. Every director acts in conformity with his own nature, with the features of his own personality.

EKO: But is there a science of management?

V. D. Yalevskiy: The application of science to management--that is a special question. I know supervisors who work completely unscientifically, replacing scientific method with activity and support of the collective. There are directors whose activity does not fit in at all with any uniform ways. But even when all the parameters of scientific management are observed, the supervisor always colors any decision or any measure in tones that are inherent with him. Even the limits of the field of activity of each director have a personal touch, as if this field had not been defined by any rules or instructions and as if these instructions had not been developed on any scientific basis.

When a new director comes to an enterprise, a new period of adaptation and mutual criticism is begun. If the supervisor comes from outside, the period of adaptation lasts at least 1½-2 years. The collective studies the new supervisor and it checks him. And no little time passes before they tell him what they actually think about him.

The director who is "at home" in the collective often does not spend even one hour on adaptation. The problem of "its" supervisor is simplified still more at a mine that is sited in a small settlement. The supervisor has been known for many years, not just at work but in everyday life, even his family is known.

EKO. So you left the mine, and matters not only did not get worse but they even got better, even without an adaptation period....

V. D. Yalevskiy: Perhaps you do not suspect that I am one of those supervisors who consider that the world is large enough for everyone. I consider that it is much more attractive to have scientists who are more interesting than you yourself are. When the director's post was turned over I had a definite organizational and technical backlog, taking into account the fact that working conditions at the mine, as at any mining enterprise, become worse each year. But Yuriy Nikolayevich Malyshev did not begin to live with this backlog, he held it at a level that assured the mine a future, and he struggled for preservation of the collective.

EKO: You consider this a personal virtue of his?

V. D. Yalevskiy: As they tell you....If a supervisor does not devote a proper bit of his time to working on the long term, he will, as they say, be "quickly figured out." The collective sooner or later will "decipher" him and will understand that it is not worthwhile to link its fate with this person. If the director does not at least for the second half of each day pay attention to questions of the long term he will hardly be accepted by the collective. This is a trend of modern economic life. From my own personal observations and from economic and regular literature, I can draw the conclusion that the top supervisor should be a leader in everything, particularly in questions that are exclusively technical. The director now gives his attention more often to questions of technical policy than do the corresponding supervisors of the enterprise's technical services, the majority of whom are submerged by current concerns. It is the director right now who determines the shape of introduction of technical progress at the enterprise, so he should be at the interface with science, be interested in innovations, and so on.

EKO: You mentioned that if the director is not occupied with the long term, then the collective will "decipher" him. How does this happen?

V. D. Yalevskiy: "Deciphering" occurs by various methods. If the supervisor from the start of his work has begun to build or to rebuild something, then they will say about him: "A proprietor-type manager has come." The man has come not for an hour but for a long time. He is not a temporary chief who sooner or later will be relieved. All members of the collective--both the closest of the director's coworkers and wage workers--need stability of supervision.

The result of this "deciphering" can be increased personnel turnover and reduction in the activness of the work of engineers and technicians. The immediate assistants, as a rule, are attuned to the work style of the new director, and more often than not reflect his personal qualities in their work.

We often see that if a young engineer spends a long time in the post of deputy, when he has not been given the right to make important decisions himself, he evolves into a stereotype of working for someone, he attunes himself to the principle of working for a superior. And if this "deputy in spirit" becomes the director of an enterprise, his style of work will at once be noticed by both the collective of engineers and technicians and by the wage-workers' collective. And here the attitude of the new supervisor toward construction often proves to be the touchstone. If he independently makes a decision to build, approves the construction program, and takes part in its compilation--he is a real supervisor.

The required combining of current and long-range concerns in a supervisor's activity greatly facilitates operations and the timely solution of questions.

The decree of the CPSU Central Committee and the USSR Council of Ministers about improvement in planning definitely identified modern planning as an action that is closely associated with consideration of the long term and is inseparable from an analysis of it.

EKO: How has the planning horizon changed for you because of your transfer to a higher level of economic management?

V. D. Yalevskiy: Of course, it set as much as 15 years aside. But it is not so much that as the change in the structure of the problems to be solved.

In this connection, I will take the liberty of setting forth in simplified fashion the role of the association in the mining industry. If we view the mine as a purely production unit, then it should be in principle independent, since there are no industrial connections among the mines. Let us take, for example, the AvtoZIL [Automotive Production Association of the Moscow Motor-Vehicle Plant imeni I. A. Likhachev]. The plants are situated in different cities of the country but they all do one job--they build motor vehicles. It is different with mines. Each works the field assigned to it, mines coal of its own grade, and works in the specifics of its own mining-geology conditions. Each mine ships its coal to the customer himself and has its own complete production cycle.

But if we speak about the mine as a social body, then questions of infrastructure and purely social problems take on first priority. Questions of the development of miners' towns and settlements, civic improvements and problems of organizing personal services and food services, including dining halls, come up. All of these are urgent problems for economic management.

Only the association can direct the efforts of several mines that are located in one region, for example, in putting the streets of a town into order, and in laying utility lines. Only together can mines build rayon-wide cultural and domestic service facilities. And in this case the association takes on the role of an organ that represents the interests of all the region's mines.

One of the first-priority tasks of the association in the modern era is to develop social dining. The ORS's [Workers' Supply Sections] of the mines deal directly with the associations in their planning. The association is obligated to build operating premises, warehouses and piggeries for the ORS's. A balanced plan for developing the shopping base and the base for social eating is compiled at the association level.

EKO: Right now it is as if you are on the other side of the director's initiative. It is no longer you, but to you, that they go in order to "shake loose" ceramic floor tile or a Japanese belt for a conveyor. Perhaps your attitude toward the directive with initiative and enterprise has changed easily?

V. D. Yalevskiy: Not in the least. Such an opinion could, perhaps, take shape when I spoke about the great role of the association in solving long-range problems. The role of the mine's economic supervisor was and is decisive. Thus, how he operates determines to a great extent both production successes and the improvement of social and domestic conditions.

Initiative and enterprise remain, it stands to reason, at the level of the individual mine. Somewhere, a supervisor with initiative is organizing a dining room better than at Zyryanovskaya. Somewhere hothouses or even piggeries are appearing. But one should not take it for granted that this will take place on a grand scale. The association has been created for that which is large in scale. One should hardly count on the large-scale phenomenon of initiative at the level of the individual mine.

so the appearance of initiative and enterprise is a completely necessary element of management. If initiative and enterprise do not appear, then the system does not reach the goals set for it. The concerns of the production supervisor can sometimes appear to be minor to higher-level management, but the supervisor himself is importunate to a known degree. He regularly bothers his superiors. And it is the duty of the chief not to consider this importunateness but to see it as business.

EKO: And if the supervisor does not have initiative? Cannot some kind of educational measures help here?

V. D. Yalevskiy: Each month at the council of directors of our association we listen to information about the advanced experience of directors with initiative. One of the methods of training is an example. If the agenda for sessions of the directors' council is examined, then almost without interruption it goes, "About the initiative...," "About the initiative...," "About the initiative...."

You know, the more I reflect on economic initiative, the more I become convinced that its sources are to a great extent the natural qualities of the person. Each person has his own inclination toward initiative and enterprise, which must be discovered. A person may have a bit of luck: during his life he encounters another person who charges him with initiative and enterprise. Someone else spends his whole working life hanging around as a deputy and is ready his whole life long to carry out someone else's order. Lives are complicated. But when a person given a post as a supervisor of an economic unit has not previously shown initiative and enterprise, I view his prospects pessimistically.

If an economic supervisor (a new one or one already broken in) has not, on reaching maturity, acquired economic skill, he will not systematically show initiative and enterprise, and it can be said here with confidence: do not expect it. The man's entire living pattern, which cannot be altered, has been shaped. I know such economic supervisors. On watching the multiple undertakings of their colleagues, they not only think but also publicly philosophize about the futility of such efforts, and they paint those efforts in personally unfriendly tones: there is a careerist or something similar, they will say. And one such will have these thoughts about himself: I will bide my time somehow in the background--neither ahead nor behind. Why should I go to all this trouble?--this is the living pattern of the supervisor without initiative.

The main thing in developing initiative and enterprise is early help in promoting these traits. And nothing here can replace the difficult start of a production career. It can be named as the main factor in the shaping of initiative and as the very first prerequisite to long-term success. Those who fall right away into good earnings, into previously tuned production work, do not become good supervisors with time. It is pertinent to recall Suvorov here: "Difficult in training, easy in battle." I note that I have been shaping criteria for judging a supervisor. It is pleasant to do business with a person who has worked as chief of a section for many years. It is well known that this is an all-purpose school and a 100-percent guarantee that the man was directly connected with production and with people. You find it face to face: you, the people, and the job. And there are almost no opportunities to take refuge in a piece of paper. Everything depends upon your own personal efforts. Everything is determined by the sum of your personal qualities. And when we examine persons selected for advancement and it is mentioned that this is one step of a biography: 5 years of work as chief of a section, this looks more attractive than if the person had worked at three mines as chief engineer.

The experience of chief engineer is, of course, not a bad experience, on the whole, for a section chief. And if a chief engineer has previously worked as a section chief, then he is a good chief engineer.

But, unfortunately, they are using, whatever it is called, nonproduction career paths: the BRIZ [office for rationalization and invention], the engineering section, and, after decades, a person becomes chief engineer, and then the director's job is not far off.

I suggest that a mandatory prerequisite for training in initiative and enterprise for a production supervisor should be his assignment to a post of immediate supervisor of a primary production collective. A person then gets the truth about himself and acquires experience that is most important for a supervisor--work with people.

EKO: And what is your attitude toward a future supervisor who has spent time also at a worker's post?

V. D. Yalevskiy: We have such a practice. This provides for an understanding of the bases of the production process. But recently this method has become dangerous. If an engineer-worker does not transfer in time to a supervisory post, then later it will be very difficult to do this. Imagine the young person who receives 500 rubles. The work is physically within his powers, he is not exhausted, and, finally, it is in no way demeaning to his personal dignity. Around him are people with secondary and secondary-technical educations. Under modern mining conditions he has to deal with automated equipment and telemetric apparatus. People who talk with him assume he has a good knowledge of electronics and strength of materials. And he sees this. But he also sees each day an out-of-breath foreman who is eternally running errands and who, because of minor organizational problems he has to solve, does not have time to engage in work on his specialty. The engineer-worker leaves, after working a regulation number of hours, but the foreman remains after the shift in order to write a report and also to hear out all sorts of unpleasant things, unpleasant even if they are presented in correct form.

In the coal industry, as is also the case with the metallurgists, the practice of promoting young specialists from worker posts to supervisory posts has been adopted. I think that right now determination of the time when it will be not too late to transfer a personel to supervisory work is becoming of increasing significance.

Moreover, it must be added that, as a rule, the hourly wage of a supervisor is now lower than the hourly wage of his subordinate. According to my computation, the director of a mine works 300 hours per month: a 10-hour workday without a break. And the pay figured out per hour is not so much.

So it is that the young specialist who is sent to a work post must be transferred from the worker position to an engineering or managerial position before he proves to be a captive of mercenary considerations, before he has begun to make calculations about hourly pay. It is necessary to preserve him for managerial activity, to save him while he retains his youthful fervor (if he did not become infected with the fungus of mercenaryism in the student construction detachment or during the practical portion of the third course).

It seems to me that assigning a young specialist to a worker position for more than half a year is dangerous. Half a year is enough time to understand how the working collective lives, to master the necessary labor methods.

EKO: Well, our questions have ended, thanks for the conversation.

V. D. Yalevskiy: Please, now I have some questions for you. Tell me, is it advantageous when the science of economics explains why one should work more slowly? Wage workers often understand something that the scientists somehow cannot explain with words. But the worker, without any textbooks, sees: yesterday they paid him 5 rubles for 10 parts, and the next month they will pay him those same 5 rubles but they will require 15 parts. And he understands: do not hurry, do not exceed the limit beyond which you work more for the same money. And he began to work barely over the minimum. Both the chief of the section and the chief of the department understood this. The plant director understood, and the minister understood....

We cannot imagine the ministry going to Gosplan and saying: "But you have given me such a small plan, and you have allocated a lot of money; well, then, what am I supposed to do with the 100 million?" It seems natural, when they say to Gosplan: "Our business is increasingly worse, make our plan a little less, and give us a little more money." And it seems that life itself is telling everyone: don't rush.

I think that this is connected with a paradoxical self-service in planning: it is as if the more you do, the more that you plan for yourself. Man turns out to be the forge of his own misfortune....

EKO: You cite this "self-service" in planning for the workplace. But it is at the workplace that both Stakhanovs and Mantulins appear.

V. D. Yalevskiy: The one does not preclude the other. On the contrary, there are not only individual Stakhanovites but also Stakhanovite brigades. There are whole Stakhanovite enterprises. But near by, a plant continues to operate at which, for the 5 rubles mentioned, you require that they make not 10 but 7 parts. A single objective assessment of labor effectiveness is lacking. According to the proclaimed principle of socialism, distribution should be made according to the work done, but in practice the most diverse rules are used, since there is no objective single assessment of the labor invested. The apricots have grown to full size, and they have been taken away to market--while you live in an ivory tower....

Where does education in orientation for enterprise begin? With the school. Three girls are sitting in one class: the daughter of a miner, the daughter of an engineer and the daughter of a commodity expert. The daughter of the commodity expert has everything: from footwear to hat, while the daughter of the engineer at times cannot afford a stylish blouse, at times is not able to buy shoes. It is asked, to which enterprise will the miner's daughter be oriented? Considerable damage is inflicted also on socialist morals. It is not evident to the miner's daughter what benefit a mine's engineer, perhaps the supervisor of the section at which her father works, brings to society.

And this little case shows those deficiencies of planning which, as Leonid Il'ich Brezhnev has repeatedly pointed out, must be surmounted, and which will be decisively surmounted by the July decree of the CPSU Central Committee and the USSR Council of Ministers.

EKO: Thank you for the conversation.

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PROBLEMS WITH COAL TRANSPORTATION DISCUSSED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 17 Jul 80 p 2

[Article by B. Pichugin, head of the Coal Industry Sector under the Krasnoyarskiy Kraykom: "Coal Made Ready During the Summer"]

[Text] This past winter in Siberia was mild, but brought many difficulties with it. People at large industrial enterprises were even counting the days until the spring thaws came. It is not surprising because this summer, coal consumers of the kray and neighboring oblasts have failed to get nearly 1.2 million tons of coal, meaning that the reserves necessary for the fall and winter period were not created. The recently adopted decree "On Providing the National Economy and Populace with Fuel, Electricity and Fuel Energy in the Summer and Winter of 1980-1981" of the USSR Council of Ministers forces us, once more, to analyze the lessons of the winter just past and to draw serious conclusions from them.

Linked into the power system of Siberia are the thermal electric power stations of the USSR Ministry of Power and Electrification and the block-stations of Altayskiy Kray as well as of Irkutskaya, Kemerovskaya, Novosibirskaya, Omskaya and Tomskaya oblasts which utilize the coal of the Kansk-Achinsk and the Minusinsk basins. The coal miners of our kray are interested in insuring that our neighbors have adequate reserves of fuel for the fall-winter period because decreasing electric power production in any portion of the unified electric power system of Siberia has an immediate effect upon the energy consumers of the entire region, i.e., upon industrial enterprises in Krasnoyarskiy Kray. Only precise coordination of the activities of coal miners and electric power workers, only their joint efforts, regardless of departmental disassociation and administrative boundaries, can lead to success. Unfortunately, we could not achieve that sort of cooperation last year. Why?

First, this very simple question: When do you think it is easier to work in the coal fields--summer or winter? Summer, of course, our reader replies. A specialist can supplement that reply. When the temperature drops below 40 degrees, the conveyor belts of rotary excavators practically stop working. Out in the coalfields of the Kansk-Achinsk Basin, this rotary equipment produces about 70 percent of the coal.

That is at once a simple and complex question. From year to year, the Ministry of the Coal Industry plans for the miners of Kansk-Achinsk to extract substantially more coal in the fourth rather than in the third quarter of the year. The difference consists of 3 percent of the annual output, which is almost 1 million tons of coal! Why could not that 1 million tons of coal be extracted during the summer, which would ease the hard work of coal miners during winter?

Within the kray, we have carefully examined this question. Coal warehouses are empty during summer at a number of enterprises belonging to the USSR Ministry of Nonferrous Metallurgy, the Ministry of the Machine Tool and Tool Building Industry, the Ministry of Railways and the Ministry of Light Industry. All the "fuss" begins at the end of the year. These producers, instead of creating fuel reserves for themselves for the fall and winter period, try to get a constant flow of coal right out of the Gondola, and therefore never get enough to set aside and store. Such a picture is characteristic of our Kray and of other oblasts of Siberia. If in planning the quarterly delivery of coal we were to include possibilities for its storage during the fall and winter period, that would provide a more equal work load for coal mining enterprises and would guarantee the normal work of industrial enterprises during the period of their maximum fuel expenditure.

Extracting the coal, however, is only half the problem. We must deliver it to consumers also. Railroad routes were set aside to forge a close link between coal reserves and thermal electric power stations located in neighborhood oblasts. How are they functioning?

Until 1979 the West Siberian Railroad, for example, reserved routes between Novosibirsk TETS-3 and the Achinsk Department of the East Siberian Railroad. The "Nazarovskiy" coal field which supplied fuel to the TETS-3 was located along those routes. So long as that delivery plan existed, the power people in Novosibirsk had no difficulties. Beginning last year, however, that section of the Transiberian Main Line was placed under the Kemerovo Railroad Line. Then the trouble began.

The West Siberian Railroad has handed these reserved routes over to the Kemerovo Railroad, which has in turn handed them over to the Achinsk Department. Movement of cars over those routes decreased sharply. As a result, by 1 October 1979, TETS-3 in Novosibirsk had received only 20 percent of the coal assigned to it by the Ministry of Power.

The East Siberian Railroad differs markedly from the West Siberian Road as to the regularity of movement of coal cars over reserved routes. This led to a situation in which, by 1 October 1979, reserves of coal at Irkutsk TETS-6 and at the TETS in Ust'-Ilimsk were only 73 percent of established assignments.

During the summer of 1979, the coal workers of our kray failed to get about 20,000 Gondola cars. The coal was available, but there was nothing available in which to haul it out. More than once, the directors of the Krasnoyarsk Railroad Line appealed to the Ministry of Railways and to the directors of other railroad lines to bring order to the movement of traffic over these reserved routes. However, the situation did not improve. The Ministry of Power, which should have taken all measures possible to provide coal reserves at electric power stations, adopted a rather original approach: USSR Deputy Minister of Power V. N. Budennyy submitted a telegram to the Krasnoyarskiy Kray Party Committee requesting an acceleration in coal shipments. Well, send telegrams wherever you wish--there are plenty of Gondola cars there but our railroad does not hear us.

As it turned out, our past winter was comparatively mild but will be remembered for a very long time by our coal miners. Because sufficient coal reserves were not allotted to electric power stations and enterprises, workers at coalmines of the Kamsk-Achinsk Basin during the winter of 1979-1980 were forced to meet maximum fuel requirements out of current production. Organizational, technical and technological measures were implemented, with party members leading socialist competitions. During the first quarter of this year, delivery of coal to consumers increased by 8 percent over the same period last year, while the volume of coal mining exceeded mine productivity capacity by 14.8 percent.

So, has the past winter taught us a lesson? Unfortunately, not everyone has drawn the proper conclusions from it. As in the past, regular movement of coal cars over reserved routes to TETS-3 in Novosibirsk has not yet been resumed. The East Siberian Railroad Line is not using these routes to haul out local cargo. Or, take this example. The USSR Ministry of Railways, in planning for May, failed to do anything about transferring unused routes involving TETS-3 at Novosibirsk to the Krasnoyarsk Railroad Line. Only after the leadership of the road had appealed to the Railway Ministry was the mistake corrected.

The CPSU Central Committee, in reviewing Pavlodarskaya Obkom's fulfilling the Central Committee's decree on the conservation of fuel and power resources at enterprises and construction sites, has indicated the importance of fuel reserves in preparing for the fall-winter period. Coal miners of Krasnoyarskiy Kray have assumed lofty socialist obligations for this closing year of the 10th Five-Year Plan. Results of their work in the first quarter of this year have proven that those obligations will be fulfilled. However, in order to get coal into warehouses, to create a reliable reserve, we need precision and cordination in the activity of the entire fuel-transport system. This is what the lessons of the past winter teach us.

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SETTLEMENTS FOR TYUMEN' OIL WORKERS DISCUSSED

Moscow IZVESTIYA in Russian 26 Aug 80 p 2

[Article by G. Fomin, Chairman of the USSR State Committee for Civil Construction and Architecture: "A City for Oil Workers"]

[Text] The oil- and gas-bearing regions of Western Siberia provide over one-half of all the oil and more than one-third of the gas extracted in the USSR. Our long-range plans for the extraction of oil and gas and for their processing, the expansion of energy production and the creation of a reliable and well-developed network of all types of transport pose quite a few problems. One of these involves providing workers with comfortable housing, an expanded system of public services and the formulation of a system of settlement which will most fully correspond to the tasks involved in the effective mastery of the given region's natural wealth.

Much has been done in this direction over the past years. Regional planning projects for Tyumenskaya Oblast have been worked out. They define the scientifically based principles of settlement in connection with the location of production. For the base cities of this oil-bearing region, cities such as Surgut, Nizhnevartovsk, Nadym, Nefteyugansk, Urengoy and certain others, general plans have been worked out and are being placed into effect. The basis of these plans is the harmonious, complex development of these cities. Large design and scientific institutes of Moscow, Leningrad and Novosibirsk are resolving tasks connected with city designing and building.

The dwelling areas of the new cities continue to expand, Surgut and Nizhnevartovsk have already exceeded 100,000 population. Between 1971 and 1979, about 10 million square meters of housing were built in cities and rayons of Tyumenskaya and Tomskaya Oblasts, with over 3.5 million of these constructed in areas where oil and gas is being extracted. Projects have already been created for a series of apartment houses, dormitories, schools and institutions for children, projects responsive to the complex environmental and climatic conditions of the region.

What has been done, however, already does not meet today's and, in particular, tomorrow's requirements for the West Siberian oil and gas territorial production complex.

Calculations show us that the number of workers in this oil and gas region should double by 1985 in comparison with 1978; in the future, the overall population should be about 2 million. In order to house this population it will be necessary to build apartment houses with an overall area of 23-25 million square meters. No matter how difficult this task, it has to be done. Creation of the necessary social and living conditions for the workers of Western Siberia is a most important prerequisite for successful resolution of the region's grandiose economic tasks. This is the point of the additional measures recently adopted by the CPSU Central Committee and the USSR Council of Ministers for further expansion of the West Siberian oil and gas complex.

Also foreseen is the necessity for complex construction on a high city designing and building level, involving a full volume of engineering equipment, plus provision of city services and greenery. By 1981, the housing construction volume is to be raised to 2 million square meters. What this entails, in other words, is an almost trebling of the 1978-1980 plan assignments which were actually fulfilled. Together with this complex of apartment houses, we must build schools for 30,000 pupils, pre-school institutions for 24,000 children and hospitals with 3,550 beds.

Many measures will be taken involving construction of roads, expansion of construction industry and construction materials bases, introduction as soon as possible of newly-introduced capacity for full unit-construction of housing and delivery and erection of wooded housing which meets the natural and climatic conditions of the region--housing comprising more than 3 million square meters.

A great deal of organizational work has already gotten under way and first steps have already been taken toward fulfilling this important decree. Advanced experience in the unitized-block construction of production structures, a technique developed by Tyumen' oil and gas construction workers which was awarded the Lenin Prize this year, is being carried over into the construction of engineering structures for new settlements.

What are the problems facing our design and construction workers in Western Siberia today?

There is, first of all, the need to be more precise in plans for the settlement of complexes on the territory, to determine for these populated places forms and systems which are more fully responsive to the rational social and economic development of the region.

The cities of Tobol'sk, Surgut, Nizhnevartovsk, Nadym, Uray, Novyy Urengoy and Strezhevoy are called upon to become strong points in the system of populated places.

The basic production and social-cultural potential of these systems and the basic volumes of housing and cultural-communal services construction should be concentrated in them.

This system of key cities is to be supplemented by a system of fixed-base workers' settlements and towns which, in turn, will become a base for shift worker settlements located in areas where oil and gas is being sought and extracted. Shift workers as well as engineers and technicians who have been assigned for days, weeks or perhaps longer periods, will reside in these settlements.

Key cities or base settlements are to become regular places of residence for workers and members of their families; they will be located in areas with comparatively favorable natural and climatic conditions. They should include cities like Tyumen' and Tomsk, plus others located outside the boundaries of Tyumenskaya and Tomskaya oblasts. These shift-worker and expedition settlements must be created out of packaged-unit prefabricated or containerized buildings, to be used for housing, for medical, cultural-public and communal services and administrative-economic purposes, and should possess all of the necessary types of engineering equipment plus amenities.

As demonstrated both by our calculations and by our experience in applying it, the shift-worker exhibition method is proving itself highly economic and socially effective. Construction volumes in regions with extreme temperatures are being decreased. The main population is being concentrated in large cities and settlements. Comfortable conditions are being created for workers and members of their families in areas more suitable for living. There is an increase in the effectiveness of personnel directly involved in production. The peak population of these new regions where oil and gas are being extracted is being decreased. Schedules for completing construction of oil and gas sites are being reduced sharply. Finally, effective use is being made of this store of housing and public buildings after sites for them have been worked out.

It has been calculated that the cost of one square meter of housing, including expenditures for normal public services in the small settlements located in the oil-gas extraction area, is more than double that in key cities and almost 30 percent of the total cost of structures in base cities and shift-worker settlements.

According to the figures of the Ministry of Construction of Petroleum and Gas Industry Enterprises, which is applying this shift-worker-exhibition method widely, its economic effectiveness is 15-16 million rubles per year per 1,000 workers. For an even broader application of this method, however, we need to improve living conditions to avoid nullifying the advantages of this progressive method.

It is necessary to facilitate fulfillment of projected volumes of housing-civil construction in key base cities and settlements.

Prefabricated and containerized buildings should be manufactured and utilized on a significantly broader scale in contemporary projects being developed by institutes of the State Committee for Civil Construction and Architecture, and these should be used to supply the new shift-worker settlements.

Finally, we should be more precise in planning for settlement and for the location of shift-worker settlements, and in working out general plans and projects for completing the construction of base and shift-worker settlements, and in working out general plans and projects for completing the construction of base and shift-worker settlements.

Resolution of the first task should be carried out in several directions. First it is necessary to see to the full utilization of the capacities of housing construction enterprises in Tyumen', Tomsk, Surgut, Nizhnevartovsk and Nadym--capacities comprising more than 900,000 square meters of housing, of which only 47 percent is being used. Between 1980 and 1985, the capacities of housing construction enterprises under the Ministry of Construction of Petroleum and Gas Industry Enterprises, the USSR Ministry of Industrial Construction, and the USSR Ministry of Power and Electrification located within Tyumenskaya and Tomskaya oblasts are to be increased to 1.7 million square meters of overall housing area.

The Ministry of Construction of Petroleum and Gas Industry Enterprises, the USSR Ministry of Industrial Construction, the USSR Ministry of Construction, the USSR Ministry of Power and Electrification, the USSR Ministry of Geology and the USSR Ministry of the Construction Materials Industry must devote particular attention to expanding their own production bases.

Draft plans for West Siberian cities and settlements call for entire small districts to be composed entirely of low wooden houses. The USSR Ministry of the Timber and Wood Processing Industry is to manufacture and provide more than 3 million square meters of such housing between 1980 and 1983. Such houses are being introduced into the nation's northern areas in accordance with new plans approved by the State Committee for Civil Construction and Architecture. Awaiting accelerated design and construction is a plant for wooden housing construction with a capacity of 500,000 square meters, which is to be built in Tyumen'.

A special role in resolving the housing problem in Western Siberia is being played by the patriotic initiative of the workers of Moscow, Leningrad and a number of union republics and oblasts of the RSFSR. Through their efforts, more than 1.4 million square meters of housing is to be built in cities and settlements between 1980 and 1983.

The question of the quality of construction and of a high level of city designing and building for cities and settlements of this oil and gas complex is particularly acute today. Of special significance in the difficult conditions of the North is planning which has been well thought through and which takes into consideration the special features of the region, a high level of engineering equipment and of good order, a perfection of composition, a completeness and total integration of ensembles of housing and of public and production buildings, the rational location and architectural cohesion of production-storage zones, plus the beauty and comfort of the building being constructed.

Responsibility for meeting these lofty requirements lies with the design organizations of the State Committee for Civil construction and Architecture and the RSFSR State Committee for Construction Affairs, which do the general design work, with local architectural planning agencies, with the clients-organizations of a number of ministries and governmental departments, with the construction workers of the Ministry of Construction of Petroleum and Gas Industry Enterprises, the USSR Ministry of Industrial Construction, the USSR Ministry of Power and Electrification, and with the design and construction organizations of cities, oblasts and republics involved in creating the cities and settlements of the complex.

The coordinated work and the lofty responsibility of all of these links is the basis for success in resolving this important task: that of providing our workers, who are extracting oil and gas for our nation, with normal housing conditions. Meanwhile, during the 10th Five-Year Plan the ministries and governmental departments which were working these oil and gas sites continued to cut back, year by year, on the volume of capital investment assigned to this nonproductive sphere. In 1977 these funds constituted only 13.2 percent of the overall volume of capital investment, whereas not less than 20 percent was required in order to solve the housing problem.

The time is ripe for reorganizing the Tyumenskaya Oblast Department for Construction and Architectural Affairs into a main architectural-planning administration, as well as for creating chief architect departments in all key cities. These organizations should constantly monitor general plan development and implementation. Under present conditions these agencies are incapable of resolving such tasks--tasks which have a direct effect upon the quality of the work involved in completing construction of these cities and settlements.

It might be expedient to have the Tyumen' Industrial Construction Design Institute under the USSR Ministry of Industrial Construction concentrate solely on designing enterprises for the construction industry as well as industrial-communal zones of the complex's cities and settlements. Also required is expansion and strengthening of the material-technical base of the Tyumen' Civil Construction and Architecture Design Institute, and of the survey work trust of "Tyumen'TISIZ" [Expansion unknown] under the RSFSR State Committee for Construction Affairs.

Considering the large volume of work involved, the compressed design schedules and the insufficient capacity of the Tyumen' Survey Work Trust, trusts located in neighboring oblasts and units of the Main Administration of Geodesy and Cartography under the USSR Council of Ministers are participating in survey work. All of these organizations, within the very near future, must provide the necessary reference data for the designers of these cities and settlements.

Successful resolution of the urgent problems of city designing and building and of housing-civil construction in the regions of the West Siberian Oil and Gas Complex will actively promote the economic and social expansion of this, our nation's main base for the extraction of oil and gas.

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TYUMEN' PIONEER INTERVIEWED ON EXPLORATION PROGRESS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Jul 80 p 4

[Article by special correspondent V. Noskov: "Farman Salmanov: 'Out of Arguments is Born...Oil'."]

[Text] He led his geological party to Surgut, convinced that there was oil there. He, Salmanov, is rightfully considered the first man to discover the Surgut, Ust'-Balyksa, Megion and Pravdinsk oil fields...Now, Farman Kurban-Ogly Salmanov is a hero of socialist labor, a Lenin Prize winner, a deputy to the RSFSR Supreme Soviet, the chief of the Main Administration for Geological Prospecting in Tyumenskaya Oblast, a Doctor of Technical Sciences.

[Question] Farman Kurbanovich, right now writers, cinematographers, journalists and artists are giving a great deal of attention to Tyumen' and to its workers. Just how much, in your opinion, does their work reflect problems, events and life in this area?

[Answer] They are not suffering from a lack of attention. This is fully understandable. The Soviet people are interested in the life and the work of the oil workers of famous Samotlor, the gas field workers of unique Urengoy, the builders of the Surgut-Urengoy main railroad line, the geologists of the Yamal Peninsula, and the fisherman of Salekhard. Tyumen' today is one of the most exciting spots in our nation. It is impossible to think of our Soviet economy today without it.

In connection with this, I would like to emphasize the fact that writers and journalists helped us toward a positive resolution of many controversial ideas which, I might add, seemed absurd at first. On the other hand, little foolishness resulted. Take just this one example. When our geologists reported that there were great reserves of oil in the mid-Ob' River area, the debate started: How are we going to get it out of the bowels of the earth? This entire territory is covered by impassable marshes and swamps which do not freeze in even the worst Siberian cold weather.

Specialists proposed quite a variety of solutions. One proposed that all of the Tyumen' North be flooded and that the fuel be extracted with equipment mounted on pontoons, just as the oil workers of Baku do it. Now this idea would be considered downright gibberish. At the beginning of the 1960's, however, we had to back our report with facts. That's where the writers and journalists helped.

There are quite a few similar examples. But that is characteristic of the situation. Publications and movies dealing with Tyumen' today prefer to concentrate upon the sharply conflicting situations which first faced us at the beginning of our conquest of Tyumen'. In reading a book or seeing a film these days one thinks: Why don't you relate the struggle of opinions now taking place as to the second stage? Why don't you speak of the arguments and conflicts out of which truth is born, of the great torment which is no lesser than before?

We should write not only about production but also about man as an individual in these extreme northern conditions. In the SE high lattitudes frosts occur which are a completely different phenomenon, in which metal crumbles like glass. Metal cannot withstand the frost, yet it is as though the cold were nothing to man. Yet there are situations which it is possible for man to break down, not because of either work or the cold but because the people around you do not understand or do not wish to see the results which can be derived through the achievement of your ideas. If you do not get the support of the people beside you, if there is no one to see that you are struggling not for your own personal benefit but for the common good, then it becomes difficult.

[Question] Way back at the beginning of the 1950's, in your diploma project, you pointed out that there was oil and gas in Tyumen'. Later, this idea was proven through practice, despite the contrary opinions of other specialists. From where stems this faith?

[Answer] This question is often posed to me: What roots are there which tie you, an Azerbaydzhani, to Siberia? In my youth, I was fortunate enough to read certain works of Academician [T. M.] Gubkin, works which stressed the idea that the area East of the Urals should be searched for oil. While I was studying at the Azerbaydzhan Petroleum Institute, I had three tours of practice training in Western Siberia where, together with geologists, I covered many hundreds of kilometers. After completing my studies, I succeeded in being assigned there because I was convinced that there was oil there. At one point, I expressed my ideas rather heatedly at an important conference. I had not yet finished my statement when the presiding officer, a well-known specialist on West Siberian affairs, interuupted me to ask: "What is your name, young man?" "It is Salamanov," I replied. "I know no such person," was his response. I understood that my opinion as an ordinary geologist carried no weight...

What I had to do was to convince them, not with words but with deeds. Together with dozens, with hundreds of geologists who had the same idea that I had, we discovered oil and gas sites. There are altogether 200 in Tyumenskaya Oblast.

[Question] Today Tyumen' is called our nation's main fuel and energy base. Over the next decade that base will provide us with a fundamental increase in oil and gas. What then?

[Answer] I've already stated that we are having no fewer arguments over this second stage of the conquering of Western Siberia, particularly over the manner in which we are to work its deposits. Certain of our specialists propose that the extraction of fuel proceed at a pace in which there would be enough left for our descendants. Personally, I have nothing against this idea. To think of those who will live here after us is the sacred obligation of every citizen. But I can in no way agree with those who point out that we gave achieved the peak in Tyumen' as to the extraction of oil and gas. I wish to remind them that, this year, the nation derived from Tyumen' over 300 million tons of oil and more than 150 billion cubic maters of gas. To many it would seem that we have already exceeded our limit.

Indeed, in Siberia, we have made a thorough studv of only about 12 percent of its territory, and that was primarily in the Mid-OB' River area. What lies beneath the surface of the Yamal and Gydan Peninsulas? All that needs to be studied.

Our geologists have already encountered oil gushers not only to the North of Samotlor but also on the wide territory of the Yamalo-Nenets okrug. The sites discovered there--Vostochno-Tarasovsk, Muravlenkovsk, Yen-Yakhinsk and others--number this region with those with the greatest prospects for the future. We have had hopeful results also in the southern portion of the Yamal Peninsula.

[Question] Is it now any easier for you, as leader of our nation's greatest detachment of geologist, as a sceintist with a well-known reputation, to implement your ideas?

[Answer] This is the way things are. I did not have such support earlier. However, my opponents were never higher than heads of main administrations. I myself now occupy such a position. My arguments are with those who formulate plans and with those who carry out the policy of one or another industrial branch.

I wish to emphasize this thought also: it is good that in this interesting matter, we have the participation not only of optimists but also of those specialists whom we label as pessimists. Neither the optimists nor the pessimists give each other peace and, as a result, we receive valuable proposals and ideas. In our collective, the optimists prevail, people who discover new deposits.

[Question] Farman Kurbanovich, at the elections which were just held you were elected deputy to the Supreme Soviet of the RSFSR. Does this mean that now, in addition to your concerns about production, you have plenty of other problems.

[Answer] That is something which I understood even during my meetings with the electorate.

Having analyzed the mandate of the electorate together with the main administration's party organization, we are already acting upon requests which cannot be delayed. Thus, we have already made a decision this year to increase housing construction twofold. To be erected are: a polyclinic, kindergarten, schools, two boarding schools; one in Tyumen' and one on the shore of the Black Sea.

As I have already stated, many of our collectives are working above the Arctic Circle. In order to provide those people working in the remote expanses with fresh vegetables, we wish to put up our own hothouse there, one which will be the largest in the Tyumen' North.

Within our geological expeditions I have heard people's complaints to the effect that very few performers, writers and singers travel out to see them. As a deputy I shall, of course, strive to establish contact with these cultural workers.

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